THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the Collector, Historian and Old Time Wireless Operator

VOL. 35 AUGUST 1994 NO. 3

ANTIQUE WIRELESS ASSOCIATION, INC.

BOX E

BREESPORT, NEW YORK 14816

The "Old Timer's Bulletin": The AWA Journal

The *Old Timer's Bulletin* is published approximately four times a year, on an all-volunteer basis, by and for members of the Antique Wireless Association, Inc. AWA is a nonprofit historical society founded in 1952 and chartered by the State of New York. The *Old Timer's Bulletin* is available through AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. This publication does not accept paid advertising. It is not liable in any way for any buying-and-selling transaction entered into as a result of its contents.

OFFICERS

President: Bruce Roloson
1st V. P.: Richard Ransley, WA2TLR
2nd V. P.: William Fizette, K3ZJW
Secretary: Joyce Peckham
Treasurer: Dexter Deeley, N2XYS
Curator: Bruce Kelley, W2ICE
Attorney: Sherwood Snyder, W2KFU

DIRECTORS

Art Albion
Larry Babcock
Dexter Deeley
Chris Fandt, WB2WAO
William Fizette, K3ZJW
Jim Frederick, K2GBR
Ron Frisbie
Edward Gable, K2MP
Bruce Kelley, W2ICE
Joyce Peckham
Lauren Peckham
Mani Pires
Richard Ransley, WA2TLR
Bruce Roloson
Roland St. Louis, K2LKH
Ludwell Sibley, KB2EVN
John Wenrich, K2RY
Morgan Wesson

OTB STAFF

Editor: Bruce D Roloson, (TEMP)
Contributing Editors:
Amateur Radio: Mike Raide, KF2MW
Bud Hall, K2LP
Classified Ads: Richard Ransley
Comm. Receiver: Bill Fizette, K3ZJW
Early Eqpt. Profile: Lauren Peckham
Key & Telegraph: Roger Reinke
Loudspeaker: Floyd Paul, W6THU
Meet the Collectors:
Rodney Schrock, KD3OR
The Museum: Bruce Kelley, W2ICE
New Members: Joyce Peckham
Obituaries: Charles Griffen, W1GYR
Restoration: Ludwell Sibley, KB2EVN
Television: Jack Davis
Transistor-Topics: Open
Vacuum Tube: Bro. Pat Dowd, W2GK

CONFERENCE COMMITTEE

Chairman: Bill Fizette
Programs: Lauren Peckham
Auctions: Bruce Roloson & Ed Gable
Equipment Contest: Ralph Williams
Registration: Joyce Peckham
Photos: Richard Ransley

HONORARY MEMBERS

Gioia Marconi Braga
Charles Brelsford, K2WW
Anthony Constable
Fred Hammond, VE3HC
Lou Moreau, W3WRE (Silent Key)
Grote Reber
Elliot Sivowitch

REGIONAL MEETING REPS

Arizona: Chuck Brelsford, K2WW
California: Floyd Paul, W6THU
Canada: Fred Hammond, VE3HC
D. C. Area: Paul Mooney, K4KRE
Florida: Norm Smith
Indiana: Ross Smith
New Jersey: John Richardt, W2WIY
Mike Feher, N4FS
New York: Lauren and Joyce Peckham
North Carolina: Ron Lawrence, KC4YOY
Texas: Chevie Crandell (Dallas)
David Moore (Houston)

AWARDS ADMINISTRATORS

AWA Houck Awards: John Terrey
BK-OTB Award: Bill Denk
Equipment Awards: Ralph Williams
Taylor Award: Ross Smith
Tyne Award: Lauren Peckham

WHOM TO CONTACT

Please write legibly. Enclosing an SASE speeds replies.

Dues and address changes: Joyce Peckham (Secretary), Box E, Breesport, NY 14816, (607) 739-5443. Dues: 1 year, $12; 2 years, $22; overseas (airmail), $15. Make check payable to AWA.

Bulletin material; news of non-joint meets; Bruce D Roloson (Temp-Editor), 2 Walnut Pl., Apalachin, NY 13418, (607) 625-3031. **(Exception: column material should go to column editors.)**

Orders for the AWA Review or back issues of OTB: Debbie Roloson, 2 Walnut Pl. Apalachin, NY,13418

Want ads, coordination of joint meets and slide/video shows: Richard Ransley (First Vice President), Box 41, Sodus, NY 14551.

Museum operation: Bruce Kelley (Curator), 59 Main St., Bloomfield, NY 14469.

AWA official business: Bruce Roloson (President), 2 Walnut Place, Apalachin, NY 13732.

Annual conference business: William Fizette (Second Vice President), RD 1, Box 55, Henryville, PA 18332.

Financial reports: Dexter Deeley (Treasurer), 8 Briar Circle, Rochester, NY 14618.

Copyright (c) 1994 Antique Wireless Association, Inc.

AWA NETS (EST)

PHONE:

Sun. 7247 kHz SSB, noon (NCS: N4FS)
3837 kHz, QRP AM, 4 PM, Nov. thru April (NCSs: W2ICE & AA2CU)
Tues. 14274 kHz SSB, 2:30 PM (NCSs: KC3YE & W0FXY)
3837 kHz SSB, 8 PM (NCS N4FS)
Mon.-Wed.-Fri. 3867 kHz, 9:30 AM (NCSs: W2ICE & W2SHN)

CW:

Daily, 4 PM, 7050 kHz (NCS varies)
First Wed. of each month, 8 PM, 7050

2-M REPEATER (Rochester area):
Mon., 7:30 PM (NCS: W2ICE)
Receive 146.820 MHz; transmit 146.220

FROM THE EDITOR
Bruce D. Roloson (Temp.)

THIS ISSUE

This *OTB* sees a change in the Editor . I would like to thank Lud for 20 issues of the OTB that he Edited and Published. Lud also did preperation and editing of this issue. I will be filling in until a new Editor can be selected.

AWA will be changing the responsibilities of the former Editor position to three areas of responsibilities; Publisher, OTB Editor and Review Editor. The Publisher, will receive edited material from the two editors (OTB and Review) and prepare the OTB and Review for publication. The OTB editor will receive columns from existing and new Contributing Editors. Then assemble and edit all material and work with the Publisher to produce the OTB on time. The Review Editor will receive articles from Contributing Authors, assemble and edit all material and work with the Publisher to produce the Review. Any one who wishes the opportunity to be part of the Publishing Team please contact me before September 15th.

AWA ANNUAL CONFERENCE

This edition of the OTB contains all the information for the AWA Annual Conference in Rochester, NY. This year's theme is World War II and its contribution to communications and 150 years of Telegraph (check the center section for details) and see related cover story below.

WHAT IS NEW

The Transistor column in this issue (Transitor Topics) is done by Norm Smith. I would like to thank Norm for his informative article. We will be looking for a new transistor Editor to coordinate this column. Anyone that would like to volunteer please contact me by September 15th.

THE COVER

This picture, taken about 50 years ago shows Lloyd Jury in the radio room of a B-17 bomber during crew training at Alexandria Army Air Field Alexandria, Louisiana. Although Lloyd was assigned to the lower turret gun in the crew, he loved to go to the radio room and listen to the BC-348 receiver on the operator's desk. The BC-348 was used as a liaison receiver. Lloyd's right hand is on the J-37 Key, which was used with the liaison transmitter in the back of and to the left of the chair. Above his head is the command transmitter modulator power supply. To the right of the bomb bay door were the command transmitter and receivers used to communicate from plane to plane. **Thanks Lloyd for the photo and story.**

CONTENTS

FEATURES

Robert Davol Budlong and Zenith
John Okolowicz and Dr. John H. Bryant 8
Tech-Manual Art - A Canadian View
Chris Bisaillion, VE3CBK..... 13
Tech-Manual Art -Another Look
Louis Meulstee,PA0PCR..... 19
AWA 1994 Rochester Conference- Insert
....Center Section
Ralph 124C 41+
Larry Babcock..... 31
Make Your Own Grid Leak Drip Pan
Bob Dennison, W2HBE 35
Terry's First Radio
Mike Adams..... 36
An Old Time Recording Voltmeter
Alton A. DuBois, Jr..... 37
HMCS HAIDA and Her Vintage Radios
Jerry Proc, VE3FAB..... 38
A Remarkable QSO
Joe Doring. 41
The G&R Valve Company
Colin MacKinnon 42
A1935 Receiver and 210 Hartly Transmitter
Joe Dreher, W2TKG, ex W9WOD..... 45
A 1929 Regen
Bob Dennison, W2HBE 47

DEPARTMENTS

AWA News..... 4
Transistor Receivers
Norm Smith..... 16
Are Martin and Albright Spinning in Their Grave?
Key & Telegraph -Roger W. Reinke 18
National Notes A New Feature
William Fizette, K3ZJW-
The Communication Receiver 17
1929 QSO Party and Contest Results
Mike Raide /Bruce Kelley - Amateur Radio 24
Arkay Loud Speaker
The Loudspeaker- Floyd Paul 34
Restoring the Pilot TV-37
Meet the Collectors- Rodney Schrock, KD3OR..... 25
Classified Ads..... 26
Back Issues..... 54
The Dutch Museum of Broadcasting
Nolan Stephany - Museum News..... 49
Reference Materials 51
The AWA Review 53
Obituaries 55
Remembering Lou Moreau 57
Evolution of the Volume Control 59
Test for Radio Historians 63
Radiola 17 and 18 64
A Ghirardi Bio 66
The Museum 67
AWA-ARCA MERGER ..... **Rear Cover**

AWA NEWS

CALENDAR

(AWA-sponsored events in **bold** type)

August 3-6	Radiofest '94, Elgin, IL
August 6	CHRS Swapmeet, Redwood City
August 13	NFWA-AWA Meet, Amherst Museum, NY
August 27	IHRS Meet, Elkhart, IN
Sept. (TBA)	CHRS meet, Benicia
Sept. 21-24	AWA Annual Conference, Rochester
Sept. 25-26	Classic Radio Exchange
Oct. 14-16	VRPS-AWA Convention, Dallas
Oct. 15	IHRS meet, Greenfield, IN
Oct. 22	HARPS Show, Middletown, NY
November 6	AWA annual bus. meeting, Rochester
Nov 11-13	1929 QSO Party

OTB POLICY ON PROMOTING EVENTS

You get the info to us, and we'll announce it.

For joint club-AWA meetings (with video/slide shows, etc.), please send the information in through Richard Ransley, the coordinator. For stand-alone club events, just get it in to the *OTB* editor - addresses on the inside front cover. Elegant format is not necessary; timeliness is. We need the simple facts up-front; we don't want a nice printed brochure, too late to be used. This section of the *OTB* is the last to close, about 4-½ weeks before the nominal date of the next issue.

After-action reports on events that have been announced in the *OTB* are welcome. Being *news*, they should be sent in while still fresh.

RECURRING MEETINGS

California Historical Radio Society. Quarterly swapmeets in the Ampex Corporation parking lot in Redwood City on August 6, and Nov. 5. Gates open at 8:30 AM. Regional events: general address is CHRS, PO Box 31659, San Francisco, CA 94131; 24-hour voicemail info: (415) 978-9100). (Info from Mike Adams)

Delaware Valley Historic Radio Club. This club in SE Pennsylvania meets, with an equipment auction, the second Tuesday of each month, at the North Penn Amusement Building, 105 Main St. (alias Rte. 113), Souderton. Membership is $5/yr. For details: PO Box 624, Lansdale, PA 19446, or Jay Daveler, (215) 368-2520.

Hudson Valley Antique Radio & Phono Society. Meetings the third Thursday of the month at 7 PM. For meeting, swapmeet, and membership info, write HARPS, PO Box 207, Campbell Hall, NY 10916, or call John or Linda Gramm at (914) 427-2602.

Mid-Atlantic Antique Radio Club. Meets monthly at the New Hope Seventh Day Adventist Church in Burtonsville, MD, Sundays at 2:00 (August 21, Sept. 18). Contacts: Lloyd Kendall, (703) 471-6143, or Joe Koester, (301) 725-4229.

New Jersey Antique Radio Club. Meets second Friday of each month at 7:30 PM. Holds three swapmeets a year. Contact: send SASE to Tony Flanagan, 92 Joysan Terrace, Freehold NJ 07728, (908) 462-6638.

Oklahoma Vintage Radio Collectors. Meets the second Saturday of each month, at Spencer's Barbecue Restaurant, NW 63rd and May Ave. in Oklahoma City. Dinner and socializing starts at 6 PM, meeting at 7. Membership is $12 per year and includes the monthly *Broadcast News*. More info: SASE to OKVRC, PO Box 72-1197, Okla. City 73172-1197; or call (405) 722-0595 or (405) 755-4139 eves.

Ottawa Vintage Radio Club. This club meets monthly (less June and July) at the Conference Room, Ottawa Citizen, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601 - 810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Membership is $10 Can. per year. (The club has made good progress on a massive data base covering "all" prewar Canadian radios, a unique and commendable project.)

Southern California Antique Radio Society. Quarterly flea market and lunch at the Velvet Turtle on Sepulveda Blvd. in Torrance, on the third Saturday of each third month. Information: Floyd Paul, (818) 242-8961.

NORTHERN CALIFORNIA MEET

(To be arranged, in September)

California Historical Radio Society will hold a meet at Home Video, 101 H St., Benicia. Contact: Jim McDowell. (Details via the CHRS voicemail line, [415] 978-9100) (Mike Adams)

CLASSIC RADIO EXCHANGE

Sunday-Monday, September 25-26

CONTINUED . . .

The 1994 Fall Classic Radio Exchange will run 1900 UTC Sunday to 0400 Utc Monday. For rules and conditions, see p. 13 of the Nov. 1993 *OTB*.

SERVICE SOURCES AVAILABLE

The "AWA Source Sheet," a listing of parts suppliers and services for the radio collector. Cost: only a business-size self-addressed stamped envelope, to AWA, Box E, Breesport, NY 14816.

TELECOMM HISTORY SYMPOSIUM

Friday-Saturday, August 5-6

This will be a popular history conference for those seriously interested in the development of telephony, following up on last year's event in Dallas at the Southwestern Bell Pioneer Museum. Location will be Pine Manor College, Brookline, MA (suburban Boston). Sponsors are the college, Region 12 of the Telephone Pioneers, and Telephone Collectors International. Conference fee is $100 per person ($50 for lecturers), including the closing banquet, if received before June 15. Rooms will be available on-campus if desired, at $40 per person per night including some meals. The keynote speaker will be Robert Bruce, author of Bell: Alexander Graham Bell and the Conquest of Solitude. For information, write to Second International Symposium, 5762 Innsbruck Rd., E. Syracuse, NY 13057-3059; Fax (315) 656-9975. (George Howard)

NEEDED - A. C. GILBERT RADIO

The Eli Whitney Museum in Connecticut is planning a special limited-time exhibit for early 1995, "Gilbert and the Radio." They need the loan (or donation) of a Gilbert radio set from the '20s. Any American Flyer, Erector, or Gilbert enthusiast with one of these sets can do the project a real service. Please contact Cathryn Ehrhardt, A. C. Gilbert Project Curator, Eli Whitney Museum, 915 Whitney Ave., Hamden, CT 06517, phone (203) 777-1833, fax (203) 432-2991.

MEET REPORT - TIMONIUM

RADIOACTIVITY-94

Larry Babcock attended the meet with the following report. Friday was a good day with lots of activity in the flea market. There was a Norden Hauck Superhet for sale for only $500. The second day was a little slow until the action started. However, some of the items were worth waiting for. For example a Kennedy model 281 with matching 521 amplifier. Some very interesting programs were also pesented on cabinet restoration, Zenith transoceanic and E. H. Scott.

MEET REPORT-EAST BLOOMFIELD

A post-meet report on the AWA Spring meet held every year at the AWA Museum Anex. The attendance was about 125 on sunny day. The auction at the Anex run by Ed Gable was as interesting as ever with some very unusual items. The flea market was very active with many about 30 venders.

MEET REPORT - TRANQUILITY

Report: AWA Meet at Schooley's Mountain Inn, New Jersey, May 14, 1994

As most everyone knows, the Northern New Jersey meet has been very popular for many years. A new location was necessary as "The Still" at Tranquility was unavailable.

Saturday, May 14th dawned with perfect weather. Joyce and I arrived at 6:00 am to set up AWA operations in the flea market. As always, many "early birds" were already set up and open for business!

Hammie Richardt had provided signs pointing to a large grassy field, located behind the Inn. Soon over 90 vendors filled the area and the ususal frantic search and buy operation was underway.

There certainly was something for everybody, including battery sets, cathedrals, catalins and transistor sets. Several book sellers were also on hand. Early receivers included Federal models such as 110, 58, and an A-10. Paragons Type 2 and Type 3 were seen, as was a Tuska 225, the early one with separate panels. A little one-tube job called the Morse-O-Phone caught my eye, along with a set made by the Pennsylvania Wireless Co. I even saw one of those real early Crosleys with wooden book condensers. Sure couldn't resist a beautiful Radiola Grand, so it's now part of the collection. There were large groups of tubes, nice hi-boys and a fine selection of restored cathedrals.

The noon meal was tasty although it seemed to take forever to reach the goodies laid out in buffet fashion.

Next year we expect to be at the same location on the usual date in May. There is a possibility that our program can be located in a separate building near the Inn, or at a fellowship hall in a near-by church.

..... See you next year! by Lauren Peckham

MEET REPORT -- HIGHTSTOWN NJ

AWA and the New Jersey Antique Radio club presented a successful joint event on May 28 at Hightstown, NJ. Expanding on previous meets at this site, the event was enlarged to add a hospitality suite the night before, a luncheon at the Town House nearby, and a catalog-based auction.

The weather was excellent, resulting in a total of 77

vendors, inside and outside, and buyer traffic amounting to about 200 cars. The Mid-Atlantic and Delaware Valley clubs were well represented, as well as the usual AWA-NJARC participants. Tubes from the NJARC tube program were on sale to attenders.

At the luncheon, Ludwell Sibley gave a slide tour of the AWA Museum, with emphasis on museum displays that illustrate New Jersey as a major site for early radio and electronic development. (After all, "radio" began in North America within 30 miles from Hightstown, via Marconi's 1899 wireless demonstration involving a wireless station at Atlantic Highlands to report yacht races.)

The auction room was open all morning for uncrowded bidder previewing; the sale took place early in the afternoon. A catalog of six pages listed 205 lots: an estate largely of communications gear, another of mainly '20s receivers, a group of tube stereo gear, club donation and other members' items, plus bring-in lots. Of special interest were a Federal 110, 13 speakers from the Twenties, a Tuska 228, Radiolas II and IV, and a Hallicrafters SX-11. There was ample National material: a rather nice FB-7, HROs, an unusually early example of the SW-3, power units, speakers, etc. Advance copies of the catalog had been made available weeks before, and a 84 bidders from 10 states took part. Walter Buffinton, a practiced auctioneer with extensive experience in radios, handled the sale, with Dexter Deeley of AWA managing check-in and check-out. Revenue amounted to $9550. Under enthusiastic bidding, prices on the communication equipment compared with those in last September's Rochester auctions; however, alert bidders got some bargains.

Most of the pre-meet organization work and on-site management was by NJARC coordinator Marv Beeferman and president Tony Flanagan. Ludwell Sibley produced the auction catalog. A follow-up event at the same site is being planned for the Fall.

by Ludwell Sibley,KB2EVN .....

OHIO MEET

MIDWEST RADIORAMA '94

Richard Arter

The featured topic at this year's Midwest RadioRama, held June 25, and 26, 1994 in Cincinnati, Ohio, was Loudspeakers: 1924-1929. Sixty-five examples were displayed, ranging from the Crosely Dynaconc to the "Voice from the Sky," an early classic design of the period. Mr. Hardy Trolander hosted a seminar on electrostatic speakers made by United Reproducers Company, of Springfield, Ohio during the late 1920's. The "Kylectron," their electrostatic speaker named for the patent holder, Colin Kyle, provided crisp, clear high frequency sound response unavailable on contemporary horn or dynamic speakers. Bankrupt by the close of the 1920's, United Reproducers Company nevertheless was a pioneer who influence is still reflected in upscale high fidelity equipment today. Trolander closed his seminar with a demonstration of a restored "Kylectron."

Saturday evening featured an opportunity to re-live the days of the 500,000 watt WLW "Nation's Station" transmitter of the late 1930's, hosted by Mr. Ed Dooley and Mr. Clyde Haehnle, retired WLW engineers. The hosts discussed the operations and maintenance of "the Big One," the politics that led to its rise and fall, and shared numerous facts and features with the audience. It took thirty gallons of distilled water per minute with a temperature rise of 22 degrees Fahrenheit to cool each transmitter tube. Yes, the neon sign at the motel across the street did glow from WLW's signal. And, yes, neighbors could WLW on their dental work, their rain gutters, and their fences!

Sunday featured a tour of the 500,000 watt WLW transmitter site where host Paul Jollilson, a WLW engineer, treated RadioRama attendees to an intimate visit with the resting giant. Attendees left in awe of the endeavor necessary to harness this powerful machine of six decades ago.

By popular request, this year's Midwest RadioRama included a tour of the "Gray History of Wireless" Museum. Housed in the studios of WCET-TV, the museum features the collection of Jack Gray, and chronicles the development of wireless communication. RadioRama sponsor, S.P.A.R.K. (Society for Preservation of Antique Radio Knowledge), donates a portion of RadioRama proceeds to the Gray "History of Wireless" Museum. Again this year, Midwest RadioRama hosted a swap meet featuring a wide variety of antique radios and related items.

ILLINOIS MEET

Wednesday-Saturday, August 3-6

The Antique Radio Club of Illinois plans its 1994 RADIOFEST at the Holiday Inn, 345 River Rd., Elgin, IL 60123. The program includes:

- o Flea market, Wednesday - Sat. noon
- o Tour of Muchow Collection, Thurs., 10-4
- o Banquet with entertainment, Thurs. evening.
- o Presentation by Bro. Patrick Dowd on the Manhattan College tube exhibit, Friday morning
- o Main auction, Friday afternoon/evening
- o Display - "Atwater Kent" - each day
- o Ladies' day program - trip/lunch in historic Geneva
- o Informative talks, Thurs. and Saturday
- o Junker & Clunker auction, Sat. 9:30 AM.

See the Jan. issue of *A. R. C.* or *ARCI News* for a

registration blank or send an SASE to Jeff Aulik, 1708 Parkview Ave., Rockford, IL 61107, (815) 399-1902 eves. or wkends. Reservations number for the hotel: (708) 695-5000. (JA)

NEW YORK MEET
Saturday, August 13

The Niagara Frontier Wireless Association will hold its annual meet with AWA at the Amherst Museum, near Buffalo, NY, 8:30 AM - 3:00 PM. There will be an antique-radio flea market, equipment contest, exhibits of locally made sets, two auctions, and program on early radio. Contest categories: o crystal sets; o AC radios; o battery receivers; and o Buffalo-area radios. As last year, auctions will be a tailgate sale for personal items and a donation auction for items contributed to support NFWA.

Coffee, soda, and doughnuts will be available. Fee: $2 per person (no extra fee to sell). The museum may be reached from Exit 49 of the NY State Thruway. Take Rte. 78 (Transit Rd.) north nine miles. Turn west on Tonawanda Creek Rd. (just before entering Niagara County), and proceed west two miles to New Rd. (Stay on the south side of Tonawanda Creek in Erie County.)

The latest Amherst Museum Display provided by NFWA covers sets made in the area: Aragain(Niagara spelled backward!), Branston, Federal, King/Colonial, Larkin Larcoflex, Promenette, USL, and Wurlitzer. (Larry Babcock)

NEW YORK MEET
Saturday, October 22

The fifth annual "Old Time Radio and Phonograph Show" will be at the Holiday Inn, Middletown. For details, see p. 5 in last August's *OTB*, or the meet report on p. 46 of the Feb. issue. Contacts: John or Linda at Gramm-O-Phone Antiques, (914) 427-2602, or Art Kingsley, (914) 446-4091 (6-9 PM).

EMPIRE OF THE AIR

The Association has a few *hardbound* copies of Tom Lewis' Empire of the Air, at a discount price: $20 plus $1 shipping. Please order from Dexter Deeley, 8 Briar Circle, Rochester, NY 14618.

NOMINATIONS FOR AWA AWARDS

It is time to nominate candidates for five prizes to be given at the Annual Conference.

The **AWA Houck Award** for **documentation** goes to an AWA member who has written several original articles on radio development or history in the *OTB*, Review, or other publication. (This can include a book on a related subject.) The **AWA Houck Award** for **preservation** is for a member who, through personal accomplishment, has acquired and preserved by documenting an outstanding collection of radio artifacts. Send your selection(s) to the Houck awards administrator, giving your reasons why the nominee(s) should receive the Award. The address: John Terrey, Box 2, Carlisle, MA 01741.

The **BK-OTB Award** is given to the member who publishes in the *OTB* an article judged to be the most outstanding, original historical presentation of the award year. For this year, articles in the Nov. 1993 and Feb., May, and Aug. 1994 issues will be considered. All AWA members are eligible for this award except those on the Award Committee and the *OTB* editor. Simply identify the article and the nominee, with reasons for your selection; send to committee chairman Bill Denk, W3IGU, 81 Steeplechase Rd., Devon, PA 19333.

The **Taylor Award**, in memory of John Taylor, RCA TV developer, is for "preserving television history." Submissions are invited here, too, to Ross Smith, 1133 Strong Ave., Elkhart, IN 46514.

The **Tyne Tube Award** is presented, in remembrance of Gerald F. J. Tyne, for contributions to preserving or documenting the history of tube technology. Nominations may be sent, with supporting reasons, to administrator Lauren Peckham, RD1, Box 676, Breesport, NY 14816-9709.

The November 1993 *OTB* lists past award winners. Please send nominations by August 1 (August 7 for the BK-*OTB* Award).

ANTIQUE ELECTRONIC SUPPLY
6221 S. MAPLE AVENUE • TEMPE, ARIZONA 85283 • (602) 820-5411 • FAX (602) 820-4643

Antique Electronic Supply
Is in under new management as of May 16, 1994. Both George H. and Geroge A. will stay on as consutants for a period of time.

The new owner will be Mr. Joe Campanella. Joe's daughter Noreen Cravener will be VP of Operations and son-in -law Greg Cravener will be VP of Technical Services.

Joe Campanella has been active in the electronics industry for over (40) years. Grreg Cravener is a graduate engineer with over (10) years experience in key engineering and computer processing positions. Noreen Cravener has over eight years experience in operations management positions, four of which are in the electronics industry.

Antique Electronic Supply will have a Hospitalty Special at the AWA Convention in Rochester Wednesday and Thursday 1:00P.M. to 6:00P.M.

ROBERT DAVOL BUDLONG (1902-1955) AND ZENITH

John Okolowicz and Dr. John H. Bryant
624 Cedar Hill Rd., Ambler, PA 19002
Copyright (c) 1994 Jon Okolowicz & Dr. John H. Bryant

Robert Davol Budlong, one of the most prolific designers of Zenith radios, was born in Des Moines, Iowa in 1902. He had an early knack for art and started studying at the Cummings School of Art at the age of 11. Budlong later graduated with a BA from Grinnell, a well known liberal-arts college in a rural setting about 30 miles east of Des Moines. He, like his brothers and father, was a gifted writer and became a member of the honorary journalism fraternity, Sigma Delta Chi, while at Grinnell. In 1922 Budlong was preparing to study architecture at MIT when he won a statewide journalism contest. The first prize led to a job in advertising on the Des Moines Register and Tribune. After a little over two years on the paper, Budlong's artistic urge re-emerged; he quit the newspaper and moved to Chicago to study at the Chicago Academy of Fine Arts and then at the American Academy of Art.

After completing his studies, he worked as a commercial artist and package designer for several years. Budlong then formed the firm of Budlong and Ecker, an advertising agency which specialized in creating direct mail-pieces. Years later, Budlong noted that they also "improved the products which we advertised."

In 1930 he formed his own industrial design firm, Robert Davol Budlong Company. His early commissions included designs for the Hammond Clock Co. and for Storey and Clark, a piano manufacturer. His daughter, Merrily, remembers that commission fondly and still has the piano as a family heirloom.

Commissions seemed to keep coming after that. Budlong executed designs for Montgomery Ward, Sunbeam (for whom he designed an award-winning streamlined toaster), Cory Company (coffee makers) and even Chrysler Motors. The client had the right to modify the product: Richard Budlong, a nephew, said, "My uncle told me that by the time that the Chrysler engineers got through with his design, the only thing that was left of his was the trunk lid."

Richard also remembers his favorite uncle's great sense of humor. "You could not be around him very long before he would have you in stitches," said Richard, "and he was also a notorious punster."

In the mid-1930s, a Mr. Wagonknecht, a Zenith engineer who knew Budlong from his work with the Hammond Clock Co., introduced him to Commander Eugene F. McDonald, Jr., the dynamo behind Zenith Radio Corporation. Budlong and McDonald hit it off from the start and soon formed a close professional relationship which led to the design of many of the classic Zenith radios. The Commander had a great respect for Budlong's design ability and pretty much gave him free reign. Several times over the years, McDonald asked Budlong to join Zenith as a full-time employee but he remained adamant about retaining his independence and the variety of design commissions available to him as a free-lance industrial-design consultant.

In 1937 or 1938, Budlong opened his expanded office on the fifth floor at 333 N. Michigan Ave. in downtown Chicago. This location was convenient for him and for Zenith because the latter had located its primary corporate showroom on the first floor. In fact, 333 Michigan Ave. was a famous address in the 1930s; the top floor was the Tavern Club, a famous after-hours club during the "wild days" of Chicago.

In 1939 the Durez Molder, a trade publication from a maker of plastics for cabinets, published a series of close-ups focusing on the prominent industrial designers of that era. In one issue Budlong was described by an associate: "Robert has a rare faculty for getting along with people; and a willingness to listen to others. I have seen him in conferences where he was subjected to quite irritating suggestions that would destroy the integrity of his design; but with a fine tact, he has almost always been able to harmonize divergent views."

At this late date, it is impossible to determine accurately the full extent of Budlong's contributions to the Zenith line.

This is particularly true of his first years of consulting for Zenith (1934-38). We do know that he did not design the famous Zenith Stratosphere. The cabinet and dial design for that radio was granted to Frank I. Johnson in 1934. Dana Mox, one of the young designers hired by Budlong in the busy postwar period, related that Budlong kept trying to break into designing major wooden radio and
television consoles, but was rarely given that opportunity.

It is likely that Budlong's office was responsible for the industrial design of most of the prewar bakelite radios and for almost all of the postwar table and portable radios of the 1946-55 era. Evidence does exist of his design of the well regarded 1939 bakelite models 6D311 and 6D315. It is also likely that he designed the 1939 bakelite 6D312. From an aesthetic point of view, it is also likely that Robert Davol Budlong was responsible for the Zenith bakelites of 1940, 1941 and 1942 as well. We are fortunate to be able to track Budlong's radio designs better than most other designers because of his "paper trail." He patented many of his designs in the 1941-55 period and we are able to put together an accurate pictorial review of many of his major designs of those years.

Although Budlong designed many of the most popular postwar Zenith products, he will likely be remembered most prominently for his design of the cabinetry for the famous Zenith Trans-Oceanic line of all-wave portable radios. The design heritage of the first (1942) Trans-Oceanic is rather cloudy; however, the designs of the four major postwar tube- type Trans-Oceanics (models 8G005Y, G500, H500 and the 600- series) are clearly attributable to the Budlong office.

Budlong was plagued with poor health throughout the post-war period. He had hypertension, suffered at least one stroke, and was diagnosed as having a severe case of asthma. By late 1954, Budlong's health was failing rapidly and Commander McDonald interceded on behalf of his friend and favorite industrial designer. McDonald's personal physician at Johns Hopkins in Baltimore quickly discovered that Budlong's supposed asthma was actually congestive heart failure! Unfortunately, the diagnosis came too late and damage to his heart was too great.

Budlong died a few months later in 1955 at age 53, at the peak of his career.

Because Budlong's firm was so small and left no successor firm, his contributions to industrial design, the profession that he helped found, are largely lost to history. However, some of his classic designs for Zenith are now sought after and enjoyed by vintage radio enthusiasts everywhere.

ACKNOWLEDGMENTS

We are indebted to Merrily Budlong Holladay, Richard Budlong, and Dana Mox for their insight into Budlong's career. The Budlong photograph was provided courtesy of Merrily Budlong Holladay.

Note: Dr. John H. Bryant and Dr. Harold Cones have recently completed the manuscript for The Zenith Transoceanic: The Royalty of Radios. This book will be well over 200 pages and will be published by Schiffer Publishing, Ltd. before Christmas 1994.

ROBERT BUDLONG

Note: Dr. John H. Bryant and Dr. Harold Cones have recently completed the manuscript for The Zenith Transoceanic: The Royalty of Radios. This book will be well over 200 pages and will be published by Schiffer Publishing, Ltd. before Christmas 1994.

Only Zenith

-The World's Leader in Portable Radios- Gives You Such Outstanding Quality Reception, Tone, Features, at Prices Like These!

NEW Zenith "Trans-Oceanic"—the standard and short-wave portable with over-all performance superior to that of *any* other portable! Gets International Short Wave on 5 separate bands. Humidity-Proofed against loss of sensitivity due to damp climate. Plays on boats, trains, planes, in remote areas. Works on battery, AC or DC. Only $99.95* *less batteries*

NEW Zenith "Universal"—the extra-sensitive standard broadcast portable making new Zenith history—with powerful stage of tuned radio-frequency—new Zenith-built speaker for tone richness comparable to big consoles. Works on battery, AC or DC. Smart, sturdy case in buffalo-grained black or brown. Only $49.95* *less batteries*

NEW Zenith "Tip-Top Holiday"—giant "Tip-Top" Dial with built-in Wavemagnet* swings up *above* the set for tip-top tuning ease, better reception. Works on battery, AC or DC. Gleaming black or two tone blue-grey plastic. Only $39.95* *less batteries*

NEW Zenith "Zenette"—tiny in size, yet a giant in power and tone! New speaker is *twice* as powerful as any Zenith has ever used in this size set. Open lid, set's on—close lid, set's off. Weighs only 5½ lbs. Works on battery, AC or DC. Maroon, black or white plastic. Only $39.95* *less batteries*

Wherever you go, whatever you do, there's a Zenith Portable that's right for you! Make your selection today, at your Zenith radio and television dealer's.

ZENITH *LONG DISTANCE* RADIO and TELEVISION

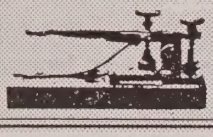
THE ROYALTY OF RADIO AND TELEVISION

© 1950

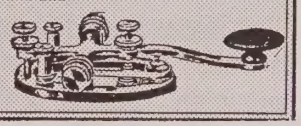
*West Coast and far South price slightly higher. Price subject to change without notice.

ZENITH RADIO CORPORATION, CHICAGO 39, ILLINOIS • OVER 30 YEARS OF "KNOW HOW" IN RADIONICS® EXCLUSIVELY • ALSO MAKERS OF AMERICA'S FINEST HEARING AIDS

KEY and TELEGRAPH



EDITED BY
Roger W. Reinke
5301 Neville Ct., Alexandria, VA 22310-1113
Please include SASE with correspondence.



ARE MARTIN AND ALBRIGHT SPINNING IN THEIR GRAVE?

The telegraphic equivalent of a "better mousetrap," promising fame and fortune, was on the minds of Horace G. Martin and others in the early years of this century. Not just incremental improvements on the familiar hand key, but brand new ways of generating code were cought. Faster sending spped had been the goal for a number of years, and before long their inventions made the ubiquitous "Triumph" steel lever key look rather archaic. In spite of the inroads of the telephone, they perceived a substantial market for faster keys, since the railroads and the dominant commercial message carriers -- Western Union and Postal Telegraph -- processed most record traffic using regular Morse circuits. Keys for spark transmission were on the horizon, but they were a different design challenge because of their high current carrying requirements.

Entrepreneurs being who they are, it wasn't long before Martin's successful vibrating pendulum arrangement was being "refined," which led to some nasty patent infringement suits. But there were a number of operators with a drill press and a junk box who only wanted a speed key with which they felt particularly comfortable. They had no motive of pecuniary gain beyond saving a few bucks. As a result, some home-made keys have survived that are unique in design, and often as nicely machined as as the most expensive keys around. Unfortunately, their origins have been lost, and trying to ascertain lineage is all but impossible. Admittedly, most "home brews" don't deserve much attention, but there are a few that demonstrate some creativity if not innovation.

One such key is shown in the accompanying photo. The assumtpion that it is a home-made speed key is based on the lack of any maker's name or serial number, but it could well have been commercially made, perhaps a prototype. Its owner notes that he "exhausted all key experts in [his] area," but no one had any information about it. Surely Key & Telegraph readers, knowledgeable as they are, can fill in the blanks, even if there are no prizes other than the satisfaction of furthering a bit of telegraphic history. The key was offered for sale to the owner with a tag attached that read "railroad speed key."

The owner goes on to say that he's resisted the temptation to disasemble the piece other than to remove the cover at the end opposite the tortoise shell paddle. "Visible this way is only the end of a vibrating reed and contact. The unit is heavily nickel plated, also the heavy three legged cross brace which has three brown, square rubber feet." The length of the "tube" is about seven inches. One pair of adjusting screws and jam nuts is knurled, but the other pair, with hex nuts to lock the screws, appears to be plain, further suggesting a home-made origin. The owner didn't describe how well the piece functioned. Are there any others like this one out there?

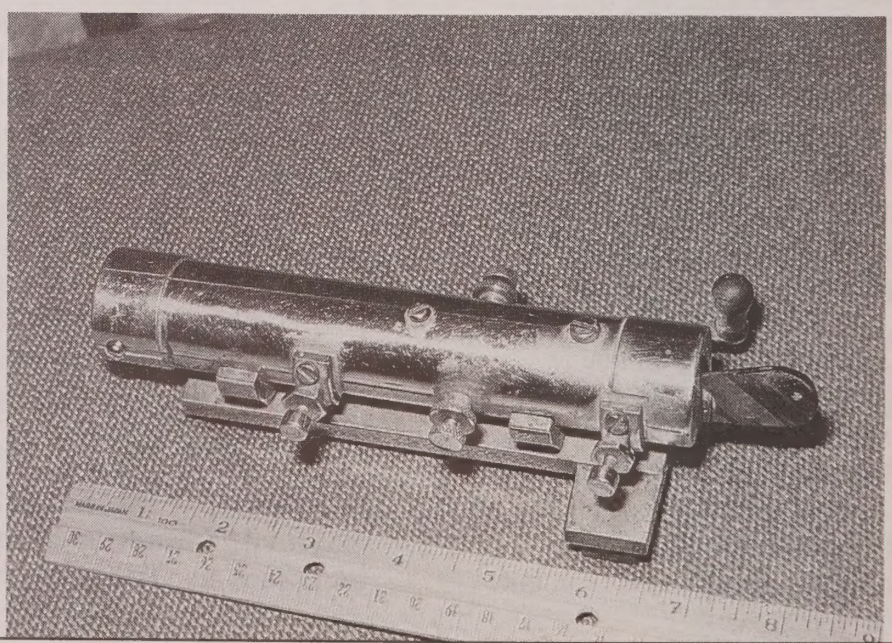
Speaking of the old familiar hand key, a reader asks when Jesse Bunnell first introduced his "Triumph" model. We know

that it was patented on February 15, 1881, as many "Triumph" levers still attest. The patentable feature of the "Triumph" was its one piece steel lever, which eliminated the problems (for the most part) of assuring contunuous electrical connection with one side of the line and slippage of the lever when the piece forming the trunnions was separate. It seems reasonable to assume that Bunnell initially marketed the key in early 1881, but what makes this particular story interesting is that there *may* have been other contemporaneous steel lever keys. For example, Patrick & Carter of Philadelphia made two styles of hand keys with a steel lever on distinctively shaped bases, as shown in their catalogue dated January 1, 1882.

The Altoona Shops of the Pennsylvania Railroad also produced steel lever keys in this time frame. There is no question, however, that Bunnell's marketing prowess was wildly successful, and it is a tribute to the key's designers that it remained essentially unchanged for many, many years. Trade catalogues of the 1890's of other telegraph instrument makers show to a remarkable extent the "Triumph" as their primary offering. Perhaps some licensing arrangement was in force between Bunnel and his competitors, or perhaps he simply offered the "triumph" to them for resale. Again, our reader would appreciate any information about the develoopment of the "Triumph" and its formal introduction to the trade.

Message to the gentleman who called me about a source for oddball sized dies and taps: the dog ate the paper on which I wrote the name and address of the company. I'd like to share it with K&T readers, so please try once more.

IS THIS SPEED KEY HOME -MADE OR A COMMERCIAL PRODUCT?



TECH-MANUAL ART - A CANADIAN VIEW

Source material from **Chris Bisaillion, VE3CBK**
1324 Old Carp Rd., R. R. No. 1, Kanata, Ontario K2K 1X7, Canada

"Tech-Manual Art" (*OTB*, Nov. 1992, p. 47) showed some examples of cartoons in U. S. military technical manuals from early in WW II. The story drew comment from Chris Bisaillion, VE3CBK, with some background focused on Canadian manuals.

In particular, the syndicated newspaper cartoonist, "Ting," did military work at the time, drawing the figures in the manual for Wireless Set No. 52 and about half the artwork in the 1944 book for "Antennae Vertical 34' Steel Mk 1." They are reprinted herewith.

Some of the smaller figures from the antenna manual show a bunny-rabbit, semi-hidden. Ting explained that military cartoonists were not allowed to sign their names to their work, so they substituted animals for signatures. He didn't do this until later, when he introduced a character called "Luke Worm," a signature to this day.

Chris interviewed Ting at "Humour Under Fire," a special open house of war cartoons at the Canadian Centre for Caricature. This is a small museum in downtown Ottawa, part of the National Archives of Canada [136 St. Patrick St., (613) 995-5138, open every day, 10 AM - 6 PM, and until 8 PM on W-Th-F].

TING BIOGRAPHY

Merle Randolph Tingley was born in Montreal. Hardly anyone calls him Merle Randolph: he's affectionately known as "Ting."

Ting graduated from Montreal High School, but his editor says he can spell anything but words. That's why he draws pictures for a living - and has become pretty good at it.

He did take an art course, but left after one year to become a draughtsman. That career was short-lived when he doodled a worm into a building plan. Apparently engineers don't like worms in foundations of their solid structures. (Today, "Luke Worm" appears hidden in all of Ting's cartoons and readers of all ages enjoy the daily challenge of unearthing the little critter with the corncob pipe.)

With Hitler on the warpath, Tingley joined the army in 1942. Shortly after, His Majesty's Canadian Forces were looking for a cartoonist to enhance the army magazine *Khaki*. Ting got the job. Later he transferred overseas to serve on the forces daily *The Maple Leaf*.

The art department of an advertising agency picked him up after the war, but the cartoon bug had bitten and you can't have much fun with beans, soap and deodorants. Hitting the road on a second-hand motorbike, he visited newspapers from coast to coast, but to no avail. The would-be cartoonist took a job as a photo-retoucher at *The London Free Press* in 1947. Two months later he wormed himself into the first *Free Press* cartoonist's job. He's still there.

Ting cartoons are now syndicated to a number of daily and weekly papers across Canada.

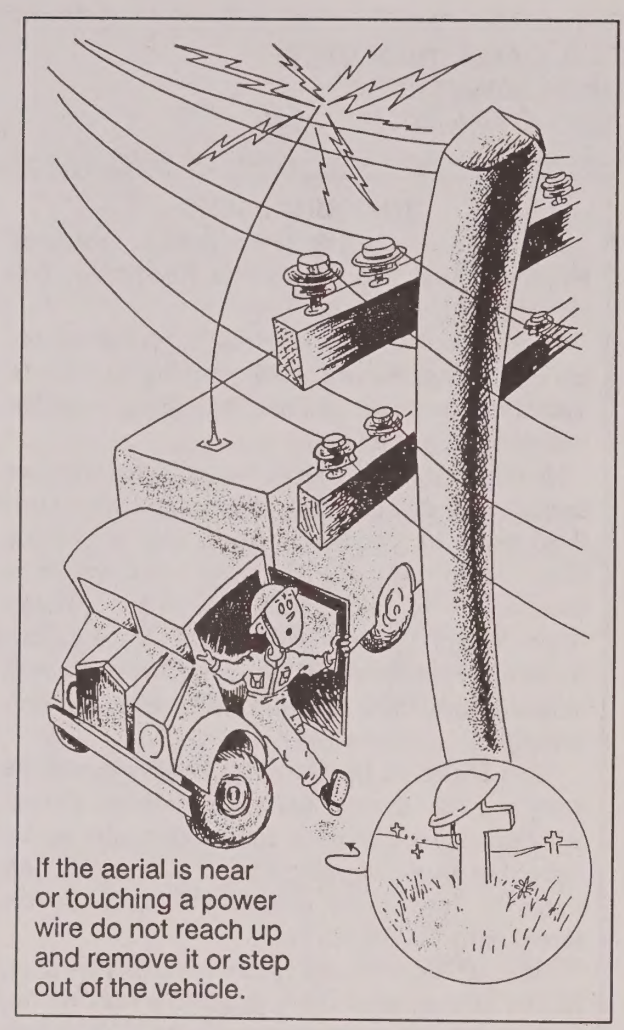
Never having lost his ties with the troops, Tingley has entertained our peace-keeping forces in Korea, the Mideast, the Congo, Cyprus and Europe. Added to this are two missions to the Pacific and the Far East sponsored by the American government.

Among his laurels are 15 national and international awards, including five for humorous writing, two children's books and nine volumes of his *Free Press* cartoons.

As a designer for London's fantasy park, Storybook Gardens, Ting has been on the advisory committee since its inception in 1958.

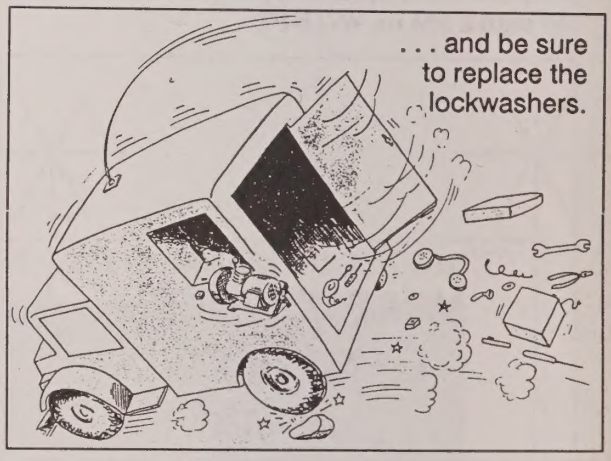
Merle Randolph Tingley has one wife, Genie, two sons, two cats, and a dog, and of course, Luke Worm.

. . . from the Community Relations Department, *London* (Ont.) *Free Press*

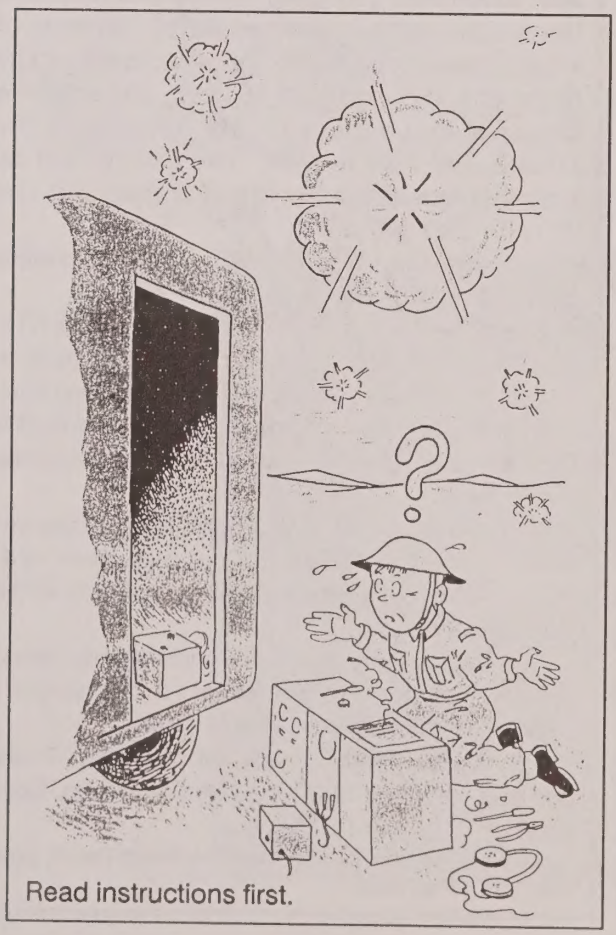


If the aerial is near or touching a power wire do not reach up and remove it or step out of the vehicle.

Avoid dead spots.

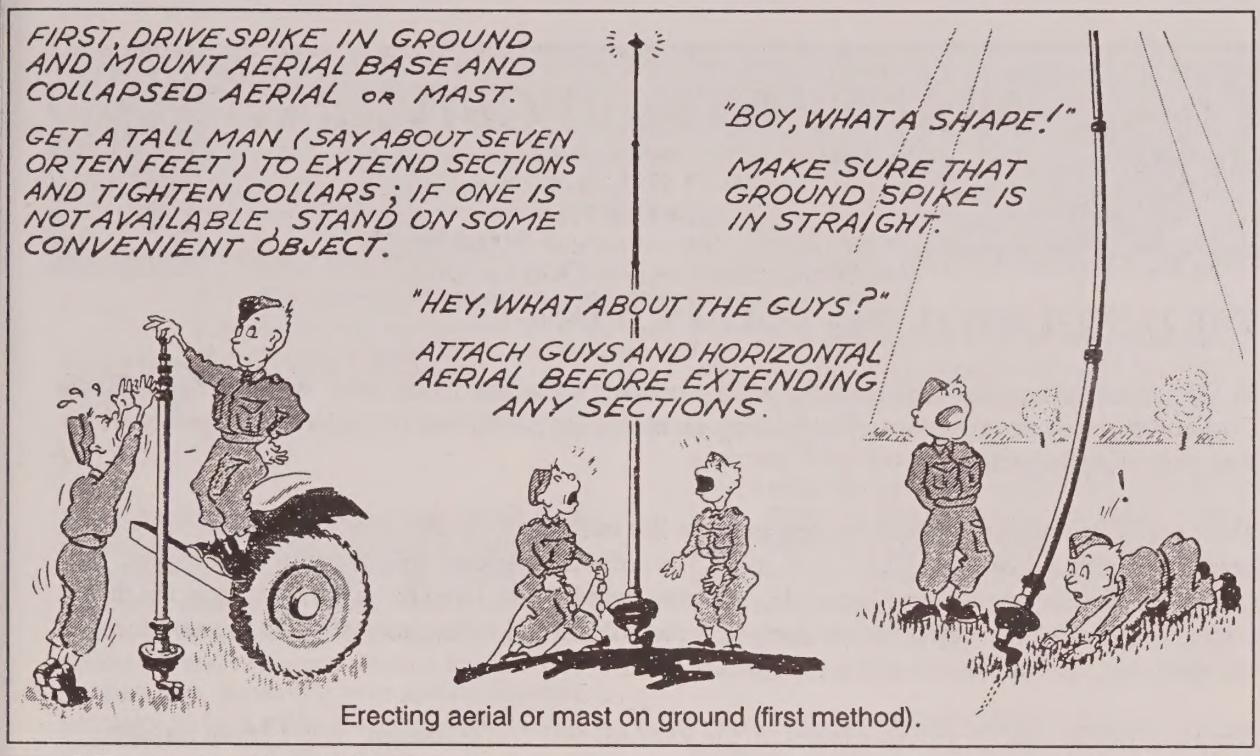


. . . and be sure to replace the lockwashers.

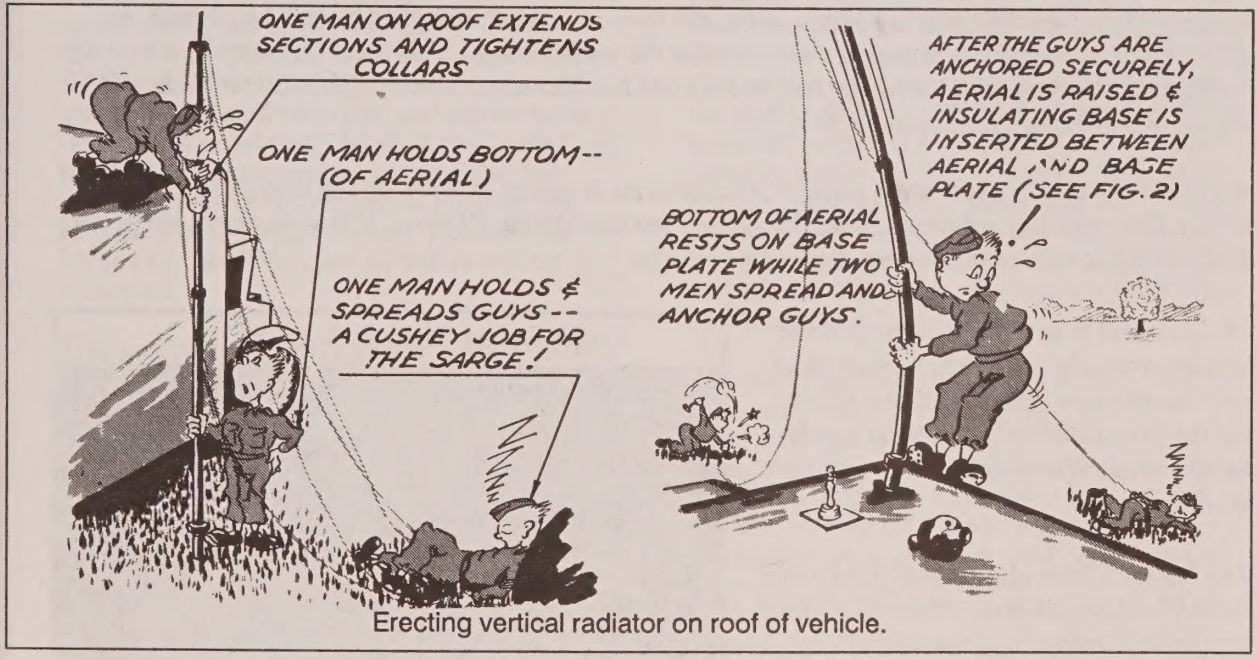


Read instructions first.

(Headphones:) When they are not in use put them in the satchel signals or in the holders.

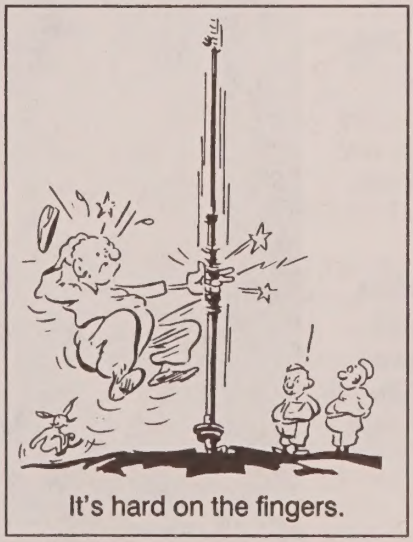


Erecting aerial or mast on ground (first method).

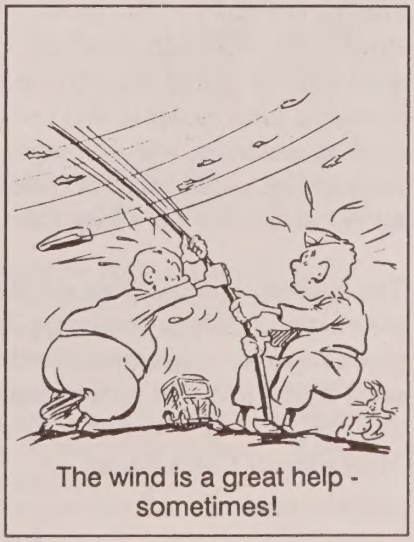


Erecting vertical radiator on roof of vehicle.

Don't get your guys tangled.



It's hard on the fingers.



The wind is a great help - sometimes!

THE ZENITH ROYAL 950 -- GOLDEN TRIANGLE

In 1959 most major radio manufacturers were producing a cordless clock radio, with the Zenith Radio Corporation being no exception. The primary exception for Zenith was the outstanding quality which they built into their entry.

The beautifully sculptured triangular design made this radio very distinctive in appearance, with it's gold satin finish, set off with 17 Kt. gold trim. The radio is supported on a graceful three legged pedestal which allows easy rotation of the unit. Displayed on the three faces of the triangle are the complimentary dial for tuning the set along with the volume and tuning controls. On the next face is the clock dial, and on the last side is the speaker grille.

The heart of this radio is a chassis based on the ROYAL 500 7AT40 design. It is a seven transistor super-heterodyne employing a separate mixer and oscillator stage, followed by two I.F. stages, an audio driver and a pair of push-pull transistors for the output stage. This set is powered by a set of 4 penlight size batteries producing the required 6 volts for the radio. The clock is a Swiss made unit which runs on one D size flashlight cell.

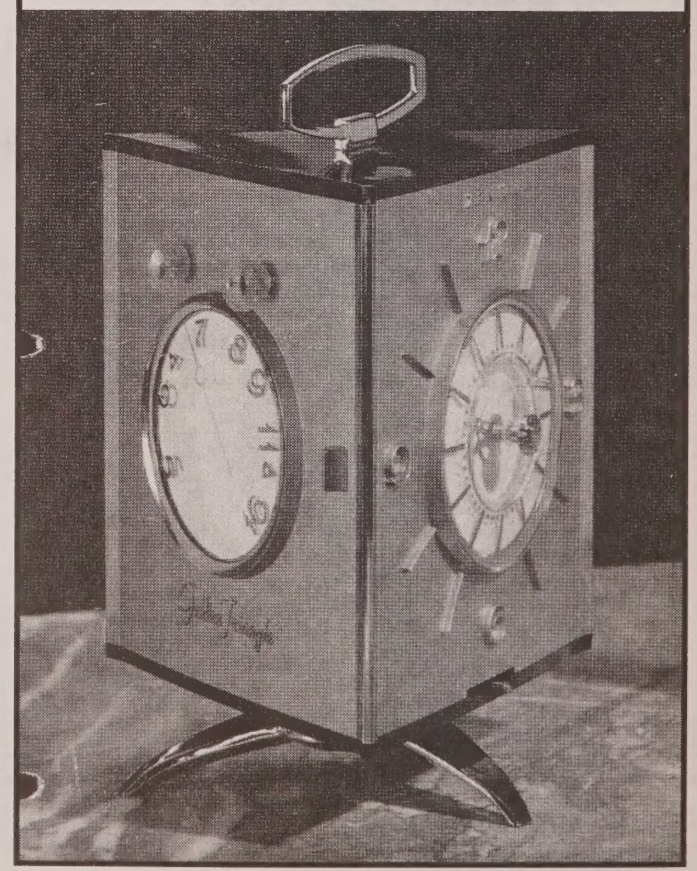
Access to the radio's chassis and battery compartments is gained by opening the side panel which houses the radio dial and chassis. Inside you will see the familiar ROYAL 500 style works along with an abbreviated half-back to cover the tunable circuits.

The charcoal gray top and bottom of the cabinet are made of an acrylic plastic and they compliment the gold cabinet nicely. On the top of the cabinet there is a gold handle which allows easy carrying of the set.

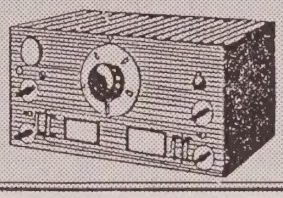
The "Golden Triangle" retailed for a hefty $150.00 which put it out of reach for most people to purchase in a time when the average new car was less than $3,000. Due to this, sales were small and it is now quite difficult to find one of these sets. Making it even harder to find one in good physical condition, was the frequency that the batteries would leak in a radio which sat in one location for a long time.

The "Golden Triangle" was another fine example of just how good most Zenith products were. A good combination of great styling and high performance proved the truth of Zenith's slogan "The World's Most Elegant Clock Radio"

Zenith Golden Triangle Royal 950



THE COMMUNICATION RECEIVER



WRITTEN BY
WILLIAM B. FIZETTE, K3ZJW
RD 1, Box 55, Henryville, PA 18332
All correspondence requires SASE for reply.

"NATIONAL NOTES"..A NEW FEATURE

INTRODUCTION

With this column we begin a continuing series of miscellaneous notes on random topics pertaining to the products of the National Company of Malden, Mass., which we hope will be informative and helpful to National collectors and restorers. With a very extensive product line, extending over several decades, it promises to be a subject almost without end, encompassing receivers, transmitters, components, and associated items. Many of the receiver topics will naturally pertain to the HRO and NC-100 series, since they were the sets manufactured the most, and are particular favorites of collectors. Most of the "notes" are taken from the restoration experiences and other research of the author, but will not be restricted to this source alone. Readers are invited to contribute, and all letters will be answered.

This particular column will concentrate on the HRO receiver, starting with a particularly vexing problem faced by many a restorer.

No 1. REMOVING A FROZEN PW TUNING DIAL.

The circular PW tuning dial used on many of the National receivers such as the HRO, the NC-100 series, and the 1-10, is a thing of beauty and a joy to use. However, it is often necessary to remove it to clean, lubricate, and adjust the dial settings. And before any physical restoration work on the receiver can be done the dial must be taken off, but more often than not, it just will not come off, no matter how much force is applied. The problem is caused by the hard set screw digging into the softer metal of the tuning shaft, and spreading the metal up into a ridge that effectively locks the dial on. Often this happened when the set was first assembled at the factory.

I have tried freezing the whole set (minus 25 F) to contract the metal parts, jamming the gears and twisting the dial off, and numerous other approaches, with little or no success. It is possible, of course, to cut the tuning knob off but this is destructive and not recommended. After looking at a particular NC-100 for three years, I finally hit on the idea of removing the large tuning knob in the center of the dial assembly from the rear of the panel by unscrewing the three flat head screws that hold it on. With the dial set at 250, the three screws were visible from the rear and I was able to unscrew them with a slender screwdriver. With the tuning knob off, the end of the shaft was exposed and the problem was essentially solved.

After removing the set screw(s), a stack of pieces of cardboard about 3" x 6" was cut, and then jammed in between the dial and the front of the panel, forcing the dial forward until it was under even tension. I then gently tapped the end of the shaft using a light hammer and a piece of hardwood to avoid any more metal damage, and as the shaft retreated back into the dial, kept adding to the pieces of cardboard. Before long the dial was off and I was able to dress the shaft with a fine file. The dial was fitted back on the shaft after cleaning and lubricating.

A frozen HRO dial, on the other hand, was a bit more tricky, since the tuning capacitor effectively blocked access to the screws, and none of the screwdrivers I had would work. Finally, in desperation, I tried making a long flexible screwdriver out of a piece of steel coathanger wire. Using a small light to show me exactly where the screws were, I was able to thread the wire through the capacitor to the screw heads and break them loose. Then it turned out that the wire was too stiff (0.100") to turn around the curve, so I made another out of thinner, more flexible wire, 0.060". This did the trick, the screws came out, and the knob was off.

No. 2. SETTING THE PW DIAL CORRECTLY ON THE TUNING SHAFT

The PW dial must be mated correctly to the gear box shaft or the dial readings will not track with the calibration charts, and the numbers may not be centered in the top window. The procedure is relatively simple:
1. The dial is removed, cleaned and lubricated (I use Lubriplate, but other greases will work) and has been reassembled, ready to be reinstalled. The gear box has also been cleaned and re lubricated.
2. Jump the center dial plate with the numbers

along the gear track until the reading 250 is centered in one of the windows, the springs are vertical, and the three screws are visible through three access holes in the back of the assembly.
3. Set the tuning capacitor to approximately mid-range, slip the dial back on, and tighten the set screws. Run the dial to the end and check to see that the capacitor gangs are fully closed and symmetrical; that is, all the same. Make any necessary corrections by resetting the dial to 250, removing it, hand cranking the capacitor to compensate, and replacing the dial.

One precaution: Check to see that the dial rotates smoothly with no wobble and without scratching the panel. It seems that some of the dial castings are warped. If so, they must be replaced. I have also found one gear box with a slightly bent main worm-drive shaft.

No. 3. CLEANING THE PW DIAL GEAR BOX

The grease inside the gear box used to couple the PW dial to the tuning gang can be as much as 60 years old, hardened, serving no useful purpose, and causing dial drag. To service this, remove the top of the gear box and carefully dig out the accumulated hard grease with a probe. Then slightly spread the two halves of the split gear with a thin screwdriver and lubricate the inside faces with Lubriplate or thin oil. Use new grease on the gears. If you wish to do a complete job (recommended,) you can slide the main worm drive out, but be careful to not lose any small parts. When reassembling, be sure to put tension on the split gear halves; you can hold them in place with a nail through the alignment holes.

No. 4. BY-PASS CAPACITORS IN NATIONAL RECEIVERS

Old tubular by-pass capacitors, and some not so old, just will not work correctly, and if you have your eye on making a particular receiver work well it is necessary to replace each and every unit. Furthermore, you may run the risk of a burned-out power transformer. This is an especially prevalent problem with the NC-100 series of receivers with the heavy PP output stage, and I have seen a number of these sets with replacement or even missing transformers.

With National receivers this is usually not a major chore, since the wiring under the chassis is most often readily accessible. I use a simple Heath or Eico capacitor checker, rebuilt with good capacitors, to check mostly for breakdown under voltage. All replacements are also checked before installing, since even modern high-tech caps can be defective. Mylars and disk ceramics are the units of choice, and are usually good.

One trick, well known to the experienced restorer: When removing the old cap, leave leads in the set and solder the replacement to these leads. This eliminates the possibility of damage to the terminals. Just be sure to tin the old leads before installing the new capacitor.

No. 5. UNIQUE COMPONENTS

The radios of the 1930s used some unusual components, and National products were no exception. The FB7s and HROs among others had distinctive resistors with a white ceramic body and molded metal ends, with heavy end leads soldered into place with a technique that almost defied removal. All should be checked and if they are out of spec. on the high side it is a simple matter to bridge the bad original with a good modern resistor to bring it down to the correct value.

Another prominent item is the cathode electrolytic; there are two in each HRO, and they are in other receivers as well, riveted to the chassis. I wire a new modern unit to a small stand-off soldered to the original cap terminal, and leave the original in place physically, although disconnected from the circuit.

6. THAT OLD HOOK-UP WIRE

Surprisingly, it is not unusual to find early National receivers where the hook-up wire has corroded at the terminals it is soldered to, buried beneath the solder. This was probably due to the use of paste flux in the early days to facilitate the soldering process, and the only way to locate these spots is to examine each connection with a magnifier and a strong light, and by poking at the wiring with an insulated probe while the set is working.

It also helps to remove those blobs of excess solder. I usually do not attempt to resolder the original connection, which can be badly corroded, but cut the wire off and make a new joint, after first carefully tinning the wire. If the wire is too badly worn, you should replace it with a new piece of stranded.

TECH-MANUAL ART - ANOTHER LOOK

Source material from **Louis Meulstee, PA0PCR**
Smetanalaan 28, 3122 HP Schiedam, Holland

In response to "Tech-Manual Art" (*OTB*, Nov. 1992, p. 47), Louis Meulstee, PA0PCR, came up with a huge variety of additional cartoon illustrations. His researches covered military technical manuals from Britain, Germany, Australia, and Canada; and even turned up five more illustrations from the unidentified artist "W. H." at Fort Monmouth. It's clear from these results that Britain and the Commonwealth countries spiced up their training material with bits of humorous artwork, more extensively and longer than the U. S. Even the Germans used a little. Here is a collection of this work. Much of it falls into specific categories, as shown below.

■■■■■■■■■■■ DER FEIND HÖRT MIT! (THE ENEMY IS LISTENING TOO!) ■■■■■■■■■■■

German poster, WW I: "[Use] caution on the telephone." *Source: Alan Douglas*

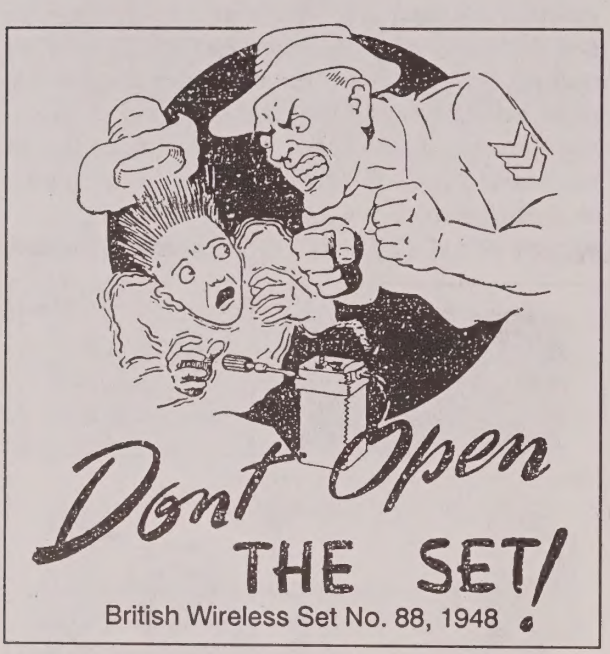
German, KlFuSpr.d (Klein FunkSprecher d., or Small Radiophone D), 1944. Examples are "**WRONG**! - Requesting Captain Müller, Second Company, for Captain Meier, First Company" and "**RIGHT**: - Requesting Falcon Leader for Typhoon Leader."

. . . German intercept operator

British, "All Informed, or a Staff Officer's Guide to Signals," 1943.

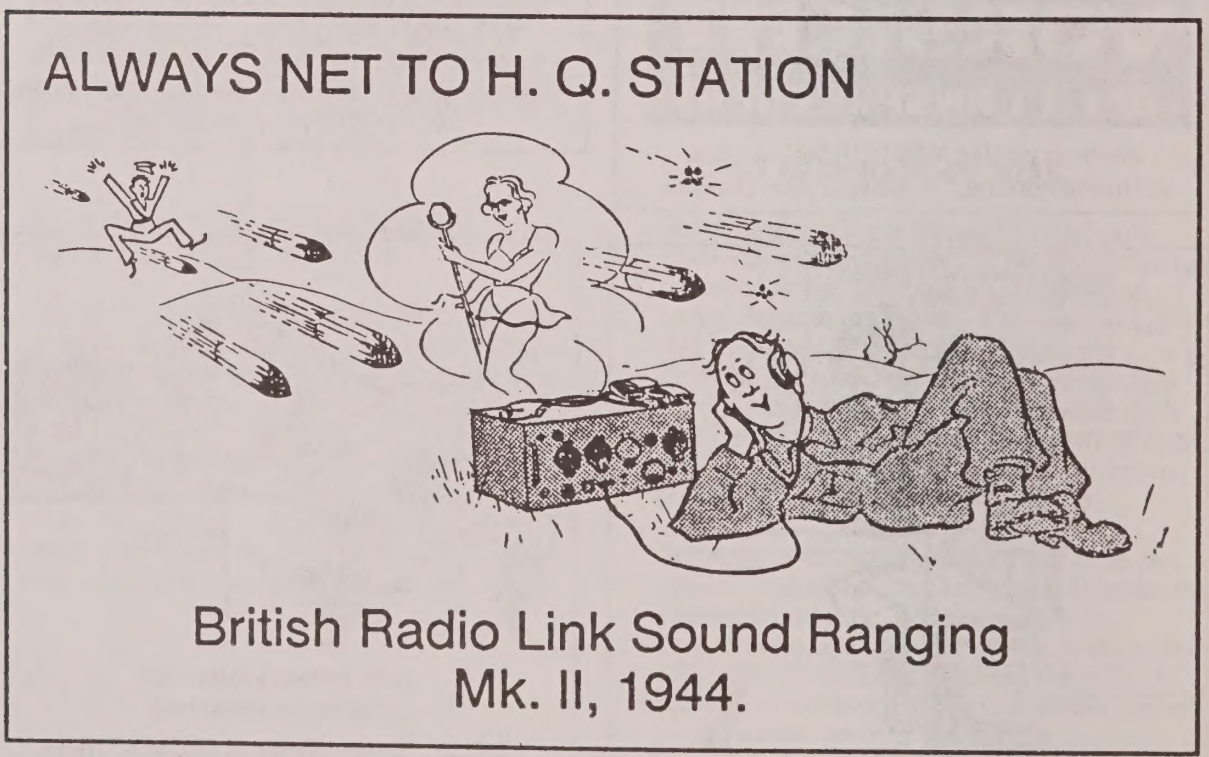
DER FEIND HÖRT MIT
(The enemy listens too)

British, "Seven Steps to SLIDEX," 1944.

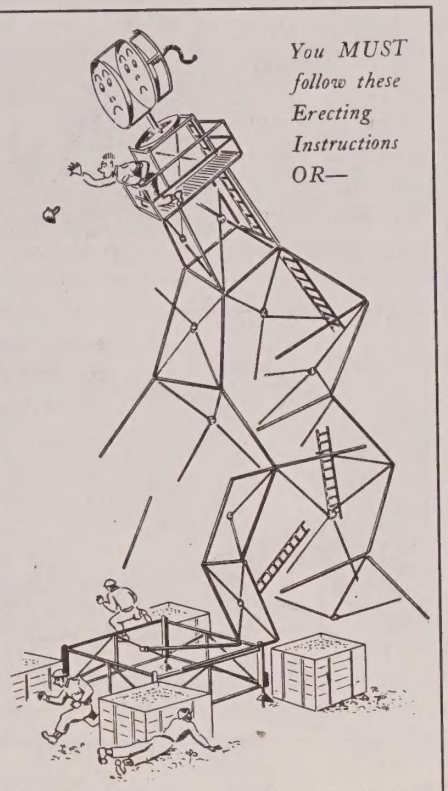


British Wireless Set No. 88, 1948

U. S. TM 11-859, SCR-593-A (BC-728-A), 1943. Tags on sets read "CHECK BATTERY - overcharged - not disconnected from mounting FT-338 (*)," "BUSTED - man-handled," and "BATTERY DEAD - left on all night."



British Radio Link Sound Ranging
Mk. II, 1944.

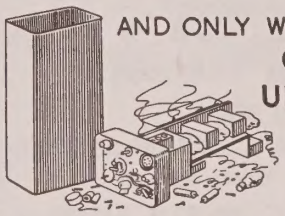


British Wireless Set No. 10, 1945.

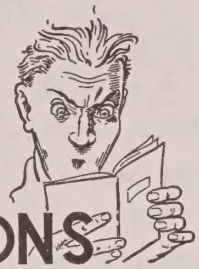
WE OFTEN WONDER

WHY OPERATORS FACED WITH A NEW SET

WILL TURN EVERY KNOB ——— SWITCH EVERY SWITCH ——— UNFASTEN EVERY BOLT ———



AND ONLY WHEN THE SET IS COMPLETELY UNSERVICEABLE



WILL THEY

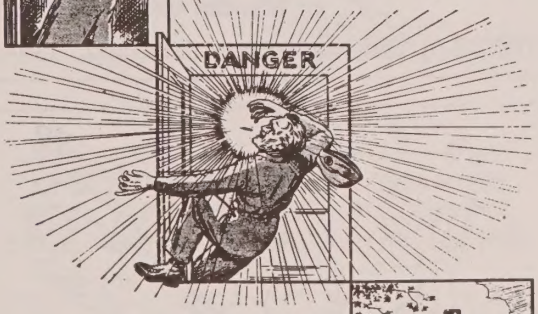
READ THE INSTRUCTIONS

British Wireless Set No. 46, 1945

LIVE WIRES MEAN — DEAD MEN

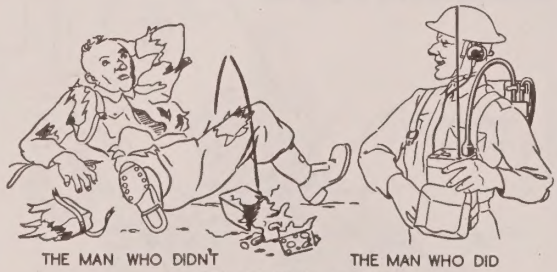
Keep away from live circuits!

300 Volts DC encountered in this set.



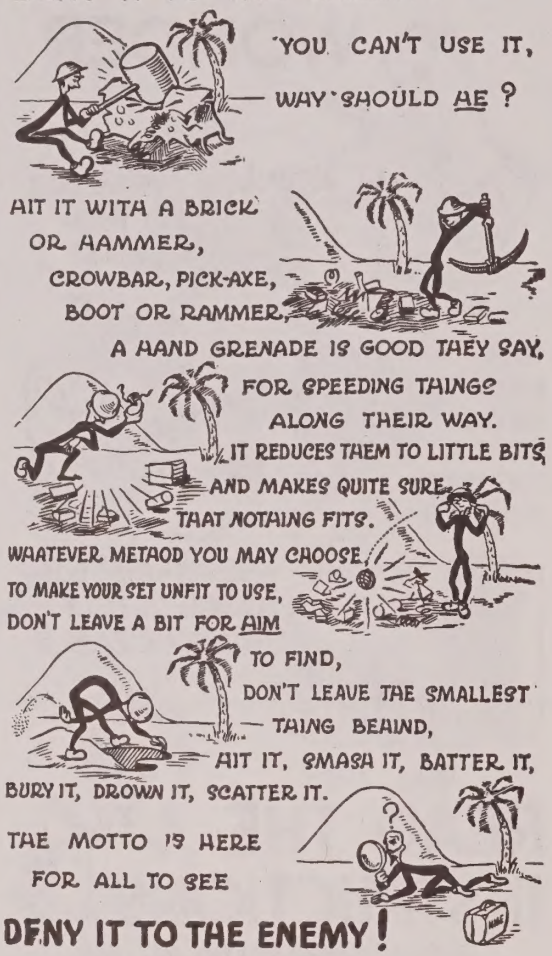
WHEN ADJUSTING ITEMS ON TRANSMITTER DECK (E. G., WHEN NEUTRALIZING) SWITCH TO "RECEIVE."

RAF, Air Publication 2528B, TR1464 transceiver, 1945.



British Wireless Set No. 46, 1945.

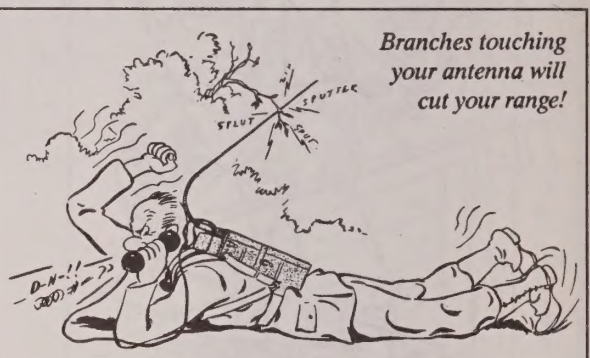
DENY IT TO THE ENEMY . . .



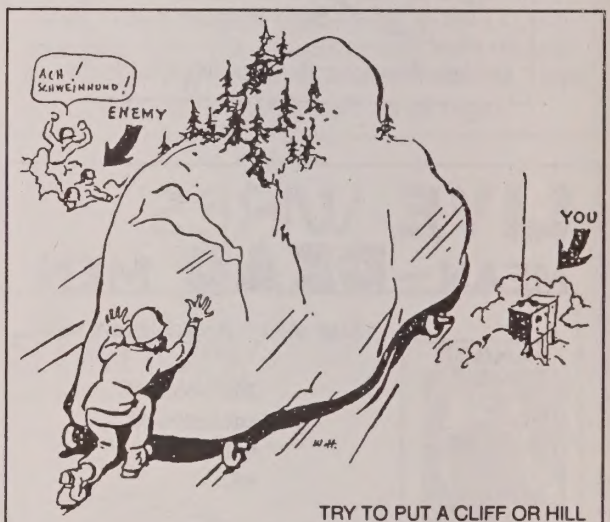
Australian Wireless Set No. 62, 1955.

WHY USE H. P. WHEN L. P. WILL DO

British Wireless Set No. 19, high-power, 1943.



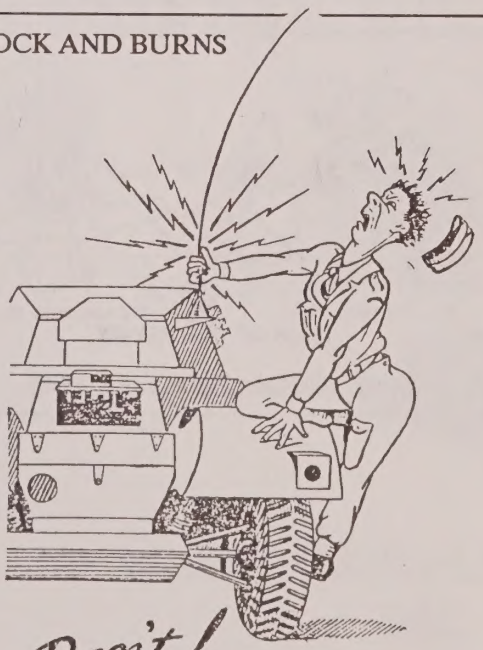
U. S. TM 11-242, SCR-300 (BC-1000), 1943.



TRY TO PUT A CLIFF OR HILL BETWEEN YOU AND THE ENEMY

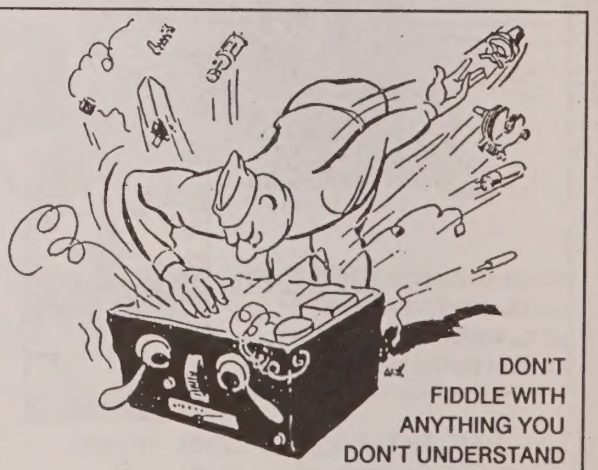
TB SIG 5, "Defense Against Jamming," 1944.

SHOCK AND BURNS



USE AERIALS AS HANDGRIPS

British Wireless Set No. 19, high-power, 1948.

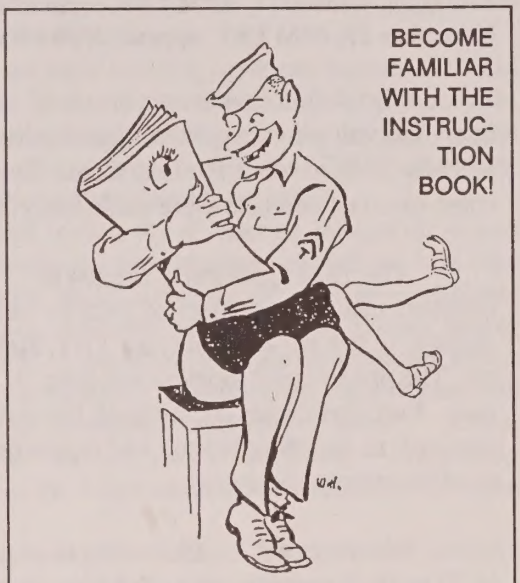


DON'T FIDDLE WITH ANYTHING YOU DON'T UNDERSTAND

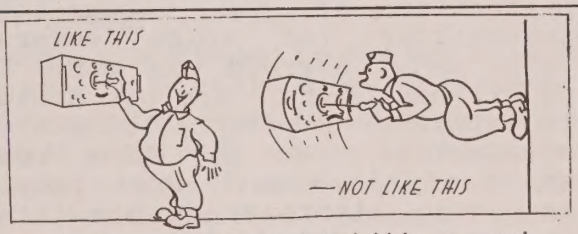
TB SIG 5, "Defense Against Jamming," 1944.

British Wireless Set No. 62, 1947.

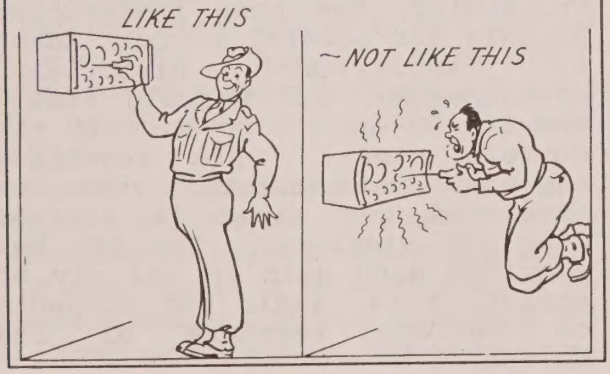
British Wireless Set No. 19, 1943.

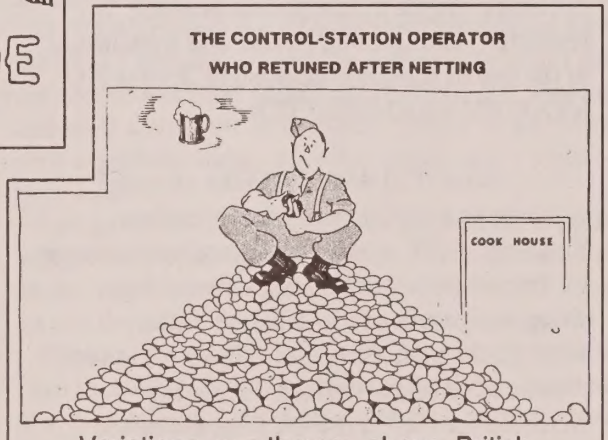


U. S. TB SIG 5,
"Defense Against Jamming," 1944.



"Kindness pays" - a pictorial idea reused.
Above, British Wireless Set No. 19, 1943;
below, Australian Wireless Set No. 62, 1955





Variations on a theme: above, British
Wireless Set No. 19, 1943; below, Australian
Wireless Set No. 62, 1955.

The Control-station Operator Who Retuned after Netting

AMATEUR RADIO

EDITED BY
Mike Raide, KF2MW
Box 181, Bloomfield, NY 14443
Please include SASE with correspondence.

1929 QSO PARTY
'29 VINTAGE EQUIPMENT
Friday, November 11, 6PM EST, to Sunday, November 13, 6PM EST, approx. 3590 kHz

Forty-eight continuous hours of operation will provide greater opportunity for W5s-6s-7s-0s to work the East Coast. Several coast-to-coast contacts were made last year.

The 1929 QSO Party is open to members using transmitters of 1929 or earlier vintage, of the self-excited type: TNT, Hartly, etc. The power input must be less than 10 watt.. Participants are encouraged, but not required, to use straight keys and regenerative or other vintage receivers.

Members will be allowed to raise power to 20 watts from midnight to 8 AM to encourage cross-country contacts. Although such QSOs are possible with 10 watts under favorable conditions, we can't count on band openings. Hence a little power increase. A reminder : this is a FUN event and a challenge in the use of primitive equipment. Please NO MODERN TRANSMITTERS.

Send "CQ AWA". Make as many contacts as possible with other members. Exchange RST, power input, and year vintage for transmitters. send a copy of your log, citing equipment used, to Bruce Kelley, W2ICE, 59 Main St. , Bloomfield, NY 14469. Photos of old time stations are always welcome for use in the OTB report of the event.

TOP TEN RESULTS FOR THE 1994 OLD TIME CONTEST

Congratulations go to W2ZM, Bob, for winning this year. There are many more participants this year, but fewer logs sent in. If you competed this year, but did not send in a log, please send it in! It helps to determine score and who to send logs to. A full list of scores will be printed in the Nov. 94 O.T.B. 73's For Now.

Place	Station	Score
1st	W2ZM	1941
2nd	KC0CW	1538
3rd	W0OG	1485
4th	W1YG	1380
5th	W2UK	1368
6th	W2LYH	900
7th	W2HBE	819
8th	W2VD1/4	774
9th	K2LP	740
10th	W2AN	702

BROADCASTING'S FORGOTTEN FATHER: THE CHARLES HERROLD STORY

Charles Herrold (1875-1948) is one of "Broadcasting's Forgotten Fathers." From his wireless college in San Jose, California, Herrold transmitted between 1912 and 1917 weekly programs of music and talk designed to entertain a small but loyal audience. In an era when most wireless communication was code and the perfection of the vacuum-tube transmitter for voice several years away, Herrold was using an arc transmitter of his own design to present regularly scheduled broadcasts. He may have been ahead of his time. Most people know very little about his life, his work or his significance.

Mike Adams, professor of radio and television at San Jose University, has been researching Herrold for several years. Adams has interviewed historians, eyewitnesses, and Herrold family members in an effort to tell the Herrold story. His resulting one-hour documentary will be completed and aired in 1994-95 over PBS stations. The AWA has provided much help in the way of photos, film, audio and comments on various versions of the script.

MEET THE COLLECTORS

Rodney Schrock, KD3OR
402 Lincoln St., Somerset, PA 15501

RESTORING THE PILOT TV-37

The Pilot three-inch TV has always been a source of fascination to me. Having restored approximately 14 of them, I thought I'd pass on some helpful servicing procedures and hints.

Let us start with a Pilot chassis, condition unknown, and restore it to operation. Start by cleaning the chassis, replacing the obvious broken parts and burned resistors. Test the tubes and make sure they are in the proper sockets (!). Find a good schematic, as in Sams' Photofact #62-16 or Rider's TV Vol. 2.

I've come to the conclusion that the "shotgun" approach of replacing all the paper condensers is a big timesaver. Definitely replace the filter condensers. Try to come up with the proper combination from a source such as Antique Electronic Supply and be sure to use twist-lock cans - neater and saves space. Of course, replace the filters in both the positive and the negative supplies.

I am convinced that replacement of the 2.5-kV filters is a must in order to avoid low or missing HV, as well as the two HV condensers between the vertical output tube plates and the vertical deflection plates of the picture tube, essential to avoiding no-pix or centering troubles. Tests on these units with low voltage are useless.

While you are at it, check the resistors in the HV bleeder and centering circuits, as well as the other components - saves a lot of trouble.

Another hint saves checking the tuner for loss of reception on the high channels. Remove the picture tube from its socket and you will see a bakelite strip with some trimmers, etc. Near the middle is a lug with a ¼" hex-head screw through it. Remove the screw. Carefully separate the lugs and clean them as well as the screw. On one set, I had no high-channel reception. While measuring voltages, I found the RF-amplifier cathode voltage high; checking the resistance to ground, I measured 100 K instead of 1.5 to 2.5. The RF choke (Pilot part #75-33) measures 1.5 ohms in some sets and 2.5 in others.

Power up the set. Check positive and negative power supplies and place a VTVM with multiplier probe or 20,000 ohms-per-volt meter on the 6-kV range and check for 2.5 kV. Push the clip on the 1B3 tube for maximum output and adjust the trimmer on T7 for 2.5 kV. Low HV may be due to a weak 25L6 power oscillator.

Hopefully you will have a raster. If not, it's possible you have a bad picture tube. Check for horizontal and vertical sawtooth waves on the output-amplifier plates.

Of course, troubles in the deflection circuits are avoided by replacing all the paper condensers, as well as diligently checking resistors. What we are striving for is linear sawtooth waves of the proper amplitude and frequency so that when the sync is disconnected, the picture can be adjusted to float across the screen; we then have the deflection frequencies in the ballpark so the sync pulse can snap them in. If frequency won't come into range, replace the 12SN7 oscillator. This holds true for all TVs.

C41, the paper coupling condenser between the video amplifier plate and the cathode of the picture tube, must be replaced, as there is always DC leakage present - you can measure it with a VTVM. Replacing it improves picture contrast and detail.

For best results, the IF must be brought up to par. The cathode and plate resistors, as well as bias supplies, must be OK; also the IF must have sufficient decoupling, otherwise bandwidth and picture quality will suffer. I would put the coils on-frequency with a good grid-dip meter, otherwise the restorer runs into tuned-grid-tuned-plate oscillating circuits. Setting trimmers A5 and A6 is important. They help determine the frequency response and selectivity of the set.

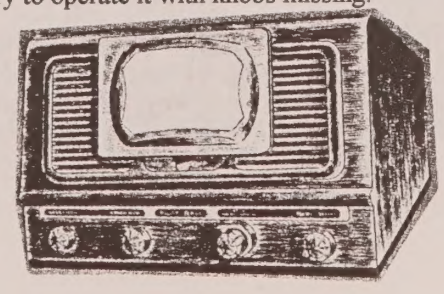
Take a look at the bias bus (contrast control circuit) - I've run into voltage problems there.

Tune the sound on-frequency with a crystal-controlled source. Often it is off-frequency, resulting in poor sound performance, sync buzz, etc. Often "no sound" is traced to an open B+-to-plate winding on L21. Don't replace the ratio-detector transformer, as I did when I first encountered the trouble. Do what I did the second and third times: strip off the old winding and wind a new one in its place. Dip it to 4.5 MHz with a grid-dip meter, align the sound and - voila! - good sound.

Best advice is to "divide and conquer" - a lot of parts will be off-value after 43 years, starting with the heater, positive and negative power supplies, HV, and on into the deflection, sync, picture and sound circuits.

Previous *OTB* advice about 3KP4s being available from Richardson Electronics is now outdated. It seems that their original CRT man - who had come to them from B-Scan Electronics in Philadelphia - has retired. At least 3KP1 green 'scope tubes are still plentiful.

DANGER - in honor of the "hot" chassis, use an isolation transformer. After the set is off the bench, don't try to operate it with knobs missing.



CLASSIFIED ADS

OLD TIME ODDS & ENDS

Att'n MORSE Operators - Repros of Bunnell Acme resonators. Black pedestal, felt base, 4 ft. cord. Hoods drilled for main line sounders or local sounder. Choice of colors: Wine red, gray, WU green or natural. $45 includes UPS. No COD's Jack Proefrock, K6QEQ, 20814 S. Hawaiian Ave., Lakewood, CA 90715/TDC

Antique phono repairs, parts, needles, springs via UPS. Free catalog. Rod Lauman, 19 Cliff St., St. Johnsbury, VT 05819 (800) 239-4188 eves.

Repair information Schematics - 1920-70 radio, ham, TV, electronic organ, test gear, Canadian, Misc. $5 PPD. For quotes on manuals, send SASE. "If I don't have it, you probably don't need it". Tektronix RM-503 scope manual and other TEK manuals. Alton Bowman, 4172 East Ave., Canandaigua, NY 14424-9564

Repair information Schematics - 1920-70 radio, ham, TV, electronic organ, test gear, Canadian, Misc. $5 PPD. For quotes on manuals, send SASE. "If I don't have it, you probably don't need it". Tektronix RM-503 scope manual and other TEK manuals. Alton Bowman, 4172 East Ave., Canandaigua, NY 14424-9564

SELL/TRADE - BC/SW TUBE RADIOS

Chassis only, working: Masjestic Model 20, $20.; Philco Model 70, 70A, 270, 270A, $20.; AK Model 87, $20.; Sparton Power Converter Model #589 with good cap. and transformer, $10. Shipping extra. Howard Kohlbrenner, 2215 Clover Dr., Broomall, PA 19008 (610) 325-0354

Addison wood, 4 tubes, $50.; Kadette 86X, wood, $50.; Coronado "Bandbox" 43-8375, $40.; Farnsworth ATL51, wood, $35.; Philco 37-60 tombstone, $120.; Detrola 282, $20.; Silvertone 2215, USA, $15. Also York DCR 92 Transistor clock radio lamp, $10. All sets working, shipping extra. Robert Rossi, 10936 Melbourne St., Allen Park, MI 48101

Atwater Kent Model 46, professionally refinished Pooley cabinet with sliding doors, working, beautiful. $799.99 P. Bert Teeples, WT50, Route 1, Box 5-C, Bastrop, TX 78602 (512) 321-7857

SELL/TRADE - COMM GEAR

Collins Filters, X564KD169, F500Y500A, F500F94, F500Y08CW, F455NBO, F455D60, F455F31, F455Z5, F250F100, F250A85, F250A20, F200L10, F112Z4, F100Z8A, F100Z2, F92Z2, F88Z2, F88M02,F80Z7, F76Z7, F68Z7, F64Z5. Also mechanical resonators 22375, 22595, 22815 Hz (Y case). All above $20. each. Henry D. Olson, 1751 CRoner, Ave., Menlo Park, CA 94025

Excellent unrestored RCA ACR-175 communications receiver (1936), for a MacKey S-600 bug or other McElroy key, or other old keys. Richard Ferranti, WA6NCX, 254 Florence Ave., Arlington, MA 02174 (617) 646-6343

FB7 40M "RF" preselector coil. Trade for FB7 "B" coil set or SW-3 coil sets. Hank Bredehorst, KD6TJQ, 2440 Adrian St., Newbury Park, CA 91320 (805) 498-8907

National HRO-M w/coils (1945) in excellent condition, $200.; Hammarlund HQ-129X in excellent condition, $150.; Johnson Viking Challenger, exc. cond.,$150. Bill Mc Collum, P.O. Box 37111, Phoenix, AZ 85069

SELL/TRADE - GENERAL

Marconiphone M-9, Brown Hornspeaker, Fellocryst crystal set, Western Electric crystal set, Mercury Super 10, Westinghouse 53. A.R. Nolf, VENLF, 539 Kastelic Pl., Burlington, Ontario, Canada L7N 3J9 (905) 333-4557

Kolster Model D-20 cabinet only - complete with clawfeet and dial escutcheon - solid but can use refinishing. $35 plus shipping. Nick Viania, 54 Neutral Ave., Staten Island, NY 10306

National NC-300; Realistic DX-100; Lafayette Micro 6 Citizens Band transceiver; Philco 37-690 console; Roberts 990 tape recorder; HH Scott 100W. Dynaural Laboratory amplifier; Fisher 200B-FM tuner; 12 years of Radio Masters catalogs. F.H. Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400

National NC-300; Realistic DX-100; Lafayette Micro 6 Citizens Band transceiver; Philco 37-690 console; Roberts 990 tape recorder; HH Scott 100W. Dynaural Laboratory amplifier; Fisher 200B-FM tuner; 12 years of Radio Masters catalogs. F.H. Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400

Teleprinters, (1) Model 32, (1) Model 33, good cond., $60. ea., $100 for both, plus shipping/pickup. Also have (2) Motorola VHF-only Tv's, (1) early 50's, 10 in., blonde wood cab; other late 50's, 14 in. brown bakelite cab., best offer either/both. Can arrange delivery within 100 miles. Tube list available, sale/trade as needed, send SASE. Dale Svetanoff, WA9ENA, P.O. Box 1317, Crystal Lake, IL 60039 (708) 658-0849

Teleprinters, (1) Model 32, (1) Model 33, good cond., $60. ea., $100 for both, plus shipping/pickup. Also have (2) Motorola VHF-only Tv's, (1) early 50's, 10 in., blonde wood cab; other late 50's, 14 in. brown bakelite cab., best offer either/both. Can arrange delivery within 100 miles. Tube list available, sale/trade as needed, send SASE. Dale Svetanoff, WA9ENA, P.O. Box 1317, Crystal Lake, IL 60039 (708) 658-0849

SELL/TRADE - KEYS

Military Keys, eg: USN Flameproof NOS, etc. Large list refundable. $2 and 2 stamps. J.H. Jacobs, 60 Seaview Terrace, Northport, NY 11768 (516) 261-1576

Old-time ads are free to members collecting and restoring equipment for personal use. **The rules:** (1) one ad per issue per member; (2) include an SASE if acknowledgement is desired; (3) material must be over 25 years old and related to electronic communication; (4) give your full name, address, and ZIP code; (5) repeats require another notice - we aren't set up to repeat automatically; (6) the Association is not responsible for **any** transaction; (7) we retain the right to reduce the size of the ad if over seven lines; (8) AWA does not accept commercial advertising; (9) deadline for ads in the November issue is September 9; those received later will be held for the following issue. Mail **all** ads to:

Richard Ransley, Box 41, Sodus, NY 14551.

SELL/TRADE - LITERATURE

Have following manuals for sale: Weston 779 analyzer; RCA WT100A tube tester; RCA Chanalyist 1620 (Rider); RCA Microammeter WV54A; RCA Television calibrator WR39C; RCA Volt Ohmyst 195-A; Hallicrafter transceiver FPM-200; Tektronix 517. Tad Drogoski, N3JZQ, 507 Coal Valley Rd, Jefferson Boro, PA 15025-3703 (412) 466-5950

Complete 3 book set "Wireless Encyclopedia", 1923, by Harmsworth, $450. G.W.H. Faassen, Heideweg 1, 5953 TL Reuver, Holland

ARRL Handbooks 1932 to 1975. $5. to $25. Excellent info for historian and builder. Dex Deeley, N2NYS, 8 Briar Circle, Rochester, NY 14618

Citizens Radio Call Book magazines (not ham callbooks), 15 issues which are also known as the complete radio "Cyclopedia". Some with over 200 pages of radio set information. Dates from 1926 thru 1932. SASE for complete description. Harry Stavert, 7231 68th AVe., N.E., Marysville, WA 98270 (206) 659-1427

Large list of books: early radio, electrical and TV. Send large SASE. Ron McClellan, 201 W. Boot Rd., West Chester, PA 19380

Literature (originals & copies): Rider's, Mfrs. Service Bulletins, Mechanical TV, Western Electric, vintage HiFi, owner's manuals for early sets/test equipment, vacuum tubes, books. Send two-stamp SAE for list. Gary Micanek, 226 Henry Ave., Manchester, MO 63011, (314) 227-7046

QST magazines 1923-1975, single or by year plus set of beautiful 1915-1975 bound volumes. Bruce Kelley, W2ICE, 59 Main St., Bloomfield, NY 14469

Random issues of Popular Electronics, Elementary Electronics, Radio Electronics, CQ, QST and other assorted TV and electronic magazines. Some electronic catalogs and random Sams up to 465. Double stamped SASE for free list. Kenneth Gfeller, 2950 Flag Rd., Abilene, KS 67410 (913) 388-2433

Sell or trade 45 years of QST, October 1948 through October 1993. Small format issues in yearly binders. All clean, in very good condition. Make bid, bring truck! Rex Byle, 3312 W. Vera Ave., Milwaukee, WI 53209 Phone (no collect) (414) 352-5214

Sell or trade 45 years of QST, October 1948 through October 1993. Small format issues in yearly binders. All clean, in very good condition. Make bid, bring truck! Rex Byle, 3312 W. Vera Ave., Milwaukee, WI 53209 Phone (no collect) (414) 352-5214

The ultimate book on one of the greatest genius of science. "The Inventions, Researches and Writings of Nikola Tesla." 496 pages, hardcover, new, by Thomas Commerford Martin, published by Barnes and Noble. 1992. $20. postpaid. Bob Cobaugh, W2AY, 29-29 213th St., Bayside, NY 11360

SELL/TRADE - MILITARY

RCAF AR-2 Receiver, 140KC-21MC, 12VDC in transit case, $150.; BC-1306, very clean. $200.; Bendix MN-26Y receiver, clean, $50.; J-48 key, mint, $50. Mel Stoller, K2AOQ, 100 Stockton Ln, Rochester, NY 14625 (716) 671-0776

RCAF AR-2 Receiver, 140KC-21MC, 12VDC in transit case, $150.; BC-1306, very clean. $200.; Bendix MN-26Y receiver, clean, $50.; J-48 key, mint, $50. Mel Stoller, K2AOQ, 100 Stockton Ln, Rochester, NY 14625 (716) 671-0776

SELL/TRADE - PARTS

NOS and used radio parts. tubes, test equipment, service data. Write wants with LSASE. Krnatz, 100 Osage Ave., Somerdale, NJ 08083

Roller Smith switchboard, 750 watt meter (1920's); two 100 amp. knife switches; DPDT 30 amp.; Handbook for Electrical Engineers (1933) leather, thumb indexed; metal compartment box for auto radio parts (1930's) and other goodies. Lot only. $80. plus UPS. Walter Gerber, 212 Skyline Manor Rd., Southern Pines, NC 28387 (910) 692-3142 before 7 PM

Volume controls: Do you need a volume control with switch for your AC-DC radio? Send SASE for brochure. James Fred, R1, Cutler, IN 46920

SELL/TRADE TEST GEAR

Tube checker, made by Daven Co., Model No 1-77B. Made for US Signal corp, in working order. Hugo Castelli, 1406 E. 5th Ave., Joliet, IL 60433-2022

WWII DuMont cathode ray oscillograph Type 208 B, Believed to be in good condition except for a broken sweep switch, $100.; Late 40s Model Knight VTVM, $50.; May have a 1930's RCA 3" Oscilloscope and a large scale Marion Volt/Ohm meter available also. Send SASE for more details. Martin Shapiro, W1YSA, 659 Main St., Ashland, MA 01721

WWII DuMont cathode ray oscillograph Type 208 B, Believed to be in good condition except for a broken sweep switch, $100.; Late 40s Model Knight VTVM, $50.; May have a 1930's RCA 3" Oscilloscope and a large scale Marion Volt/Ohm meter available also. Send SASE for more details. Martin Shapiro, W1YSA, 659 Main St., Ashland, MA 01721

SELL/TRADE TUBES

4D-32 tubes. Have five, all but one still in the original boxes. $100. each plus delivery. Pick them up if you can. Retube your Collins 32V or Viking 1 today!. Roger Firth, 281 Paragon Mills Rd., Nashville, Tn 37211 (615) 331-8806

Best offer on used, clean and tested audio & TV tubes; 2-EL34/6C47, 1-WE274A, 1-WE 422A, 2-

5R4WGY, 29-6SN7GT, 6-6BG6G, 9-1B3GT, 14-6AC7 metal, 9-5U4GB. Daniel Carella, W2ENV, 39 Mechanic St., Milburn, NJ 07041

Western Electric tube #2-A, #79,347, loose in black base, no pins, has lead out of base and cap on top. Best offer. Want books on my other hobby - Penmanship. Thanks. Del, Tysdal, 812 Broadway, #4, Fargo, ND 58102 (701) 293-9328

WANTED - COMM GEAR

Collins Transmitters: Models 30A, 30W, 30FX, 32B, 32G, 32GA, 40B. Pre-1940: National HRO, Hallicrafters Silver-Faced Skyriders. Paul Christensen, N9AZ, 11142 Raley Creek South, Jacksonville, FL 32225 (904) 721-9111

Hammarlund HQ170 slot freq. coil, Part No. K-42034-1, or anyone who has Hammarlund parts. Gerald Liccione, 118 Hiawatha Trail, Liverpool, NY 13088

Collins 75A2, Collins speaker, Collins 310B3 Antenna coil assembly and coils, F455BOB mechanical filter; Viking Navigator; DX-60B schematic (copy OK). Brian Roberts, K9VKY, 3068 Evergreen Rd., Pittsburgh, PA 15237 (412) 931-4646

Collins 75-53 in excellent shape. Also Scott Allwave with good chrome. J. Weiss, Box 533831, Orlando, FL (407) 896-8001

Hammarlund SPC-10, or HC-10 SSB converter. Bandswitch knob for HQ-180. Lselie Locklear, 1122 36th St., Gulfport, MS 39501-7116, (601) 864-8384

Information on Hammarlund HQ110 receiver, especially to convert back to original. Lou Albert, 9 Augusta St., Warners Bay 2282, NSW, Australia

WANTED - GENERAL

Wish to converse with individuals involved in the radio cabinet manufacturing/finishing process in the 20's, 30's or 40's. R.J. Dial, 3245 Sylvaner Ct., Pleasanton, CA 94566 (510) 426-1478

Radio advertizing signs and clocks. Have cash or trade items. Rick Yerke, P.O. Box 392, Moscow, PA 18444 (717) 842-4857

Alignment data for Sparton Model 134, 5 band console circa 1934. Also tube type 2A5, 2A7, 58, 56, 5Z3 new or used. Clarence Bauer, KV4BY, 1707 Guldahl Dr., Titusville, FL 32780 (407) 268-0916

Early RCA and Lear Aircraft Radio Equipment. Looking for RCA AVT-20, AVT-112, AVT-15, AVA-126 Power Supply. Lear AMT-12, AMR-12, AMG-12. Dick Hall, 248 Geneva Dr., Aliquippa, PA 15001 (412) 378-4937

GE console J125; Zenith 75363 console; dial for Radiola 60; Zenith porthole G2350Z volume knob; 16EP4A CRT; 21JFP22A CRT; Stromberg Carlson 1303 tuning knob. Keith Park, 795 Grooms Rd., Rexford, NY 12148 (518) 373-0417

GE console J125; Zenith 75363 console; dial for Radiola 60; Zenith porthole G2350Z volume knob; 16EP4A CRT; 21JFP22A CRT; Stromberg Carlson 1303 tuning knob. Keith Park, 795 Grooms Rd., Rexford, NY 12148 (518) 373-0417

GE54, Fada 260 series, radio drama transcription discs. Merrill Mabbs, 709 Pluma Drive, Rapid City, SD 57702 (605) 342-4090

German Silver Wire. Also information on Rogers World War One and other subterrenean communication systems. Bryan Knudsen, P.O. Box 211, Kenosha, WI 53141

German Silver Wire. Also information on Rogers World War One and other subterrenean communication systems. Bryan Knudsen, P.O. Box 211, Kenosha, WI 53141

Information, including sales brochures, circuits reviews, etc. for (1) Philco 112, (2) Silver-Marshall 1929 Laboratory receiver (3) Front panel model nameplate for RCA 16. Lou Albert, 9 Augusta St., Warners Bay 2282, NSW, Australia

Instruction Manual for Supreme Model 385 Analyzer/Checker; George Sterling's Radio Manual 2nd edition 1928; National Velvet Dials Type "B" ,3 mounting stud type; three section tube shield; Model 51 Philco. Larry Gimbruch, P.O. Box 5801, West Cola, SC 29171

Instruction Manual for Supreme Model 385 Analyzer/Checker; George Sterling's Radio Manual 2nd edition 1928; National Velvet Dials Type "B" ,3 mounting stud type; three section tube shield; Model 51 Philco. Larry Gimbruch, P.O. Box 5801, West Cola, SC 29171

Marconiphone Type A2 Amplifier, British and European crystal sets. I will pay top prices, serious collector not looking for bargains. Ian Sanders, 16725 Wild Oak Way, Morgan Hill, CA 95037 (408) 778-7547

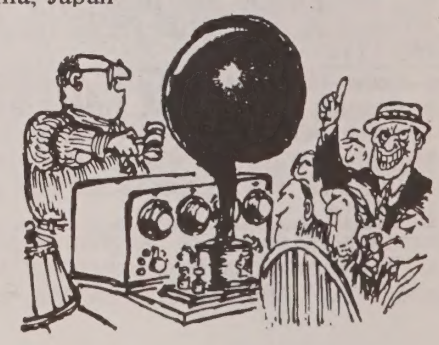
National SW3 Receiver with bandspread coils. Alfred Bert Nelson, 401 Edwards - Suite 1500, Shreveport, LA 71101 (318) 226-0700

Need front panel and large tuning knob for AK type 11 tuner. Have Grebe filament rheostat assembly as used on CR5 for trade. Have QST's from June, July, Sept., Oct. 1916 QSTs for trade for other early QST's. Bill Hurni, W3HWT, 329 Evergreen Dr., North Wales, PA 19454 (215) 699-5787

Sparton Model 931, Serial #B34849: Need complete loudspeaker assembly and owner/repair manual, repro OK. Also, Panasonic RF-513 AM/FM transistor: need on-off/volume switch. Thanks. Tom Dickinson, 407 N. Flordia St., Arlington, VA 22203-1334

Surface-barrier transistors, white noise generators, three 954 acorn tube sockets. Also information on Dowdger coils. Bryan Knudsen, P.O. Box 211, Kenosha, WI 53141

WWII Japanese military radios; early wireless related like spark transmitters, loose-coupler recievers; factory made crystal sets; tube type pocket/portable radios; anything S.S Titanic related. Takashi Doi: 1-21-4, Minamidai, Seyaku, Yokohama, Japan



"Come on, folks—who'll make it 10 cents?"

WANTED - INFORMATION

Can anyone recommend a person in the Phoenix, AZ area who has the technical capability to repair a R-399/URR receiver? Also, does anyone know the plate current for this receiver? Robert Wilson, 2038 W. Ronald Rd., Phoenix, AZ 85029-5500 (602) 997-6526

"Radio Boys" books by Chapman with original dust jackets. Henry O'Meara, P.O. Box 384, Honeoye, NY 14471

Can anyone recommend a person in the Phoenix, AZ area who has the technical capability to repair a R-399/URR receiver? Also, does anyone know the plate current for this receiver? Robert Wilson, 2038 W. Ronald Rd., Phoenix, AZ 85029-5500 (602) 997-6526

Information: Schematic for Zenith Super Seven. Also anyone able to fabricate a set of pulleys for the same set. Bill Noro, 126 Evaline St., Pittsburgh, PA 15235 (412) 371-2988

Instruction manuals for TV-2 tube tester, Drake SW-4A, Hammarlund HQ-100A, Hallicrafters SX-96, and National NC-140. Need 100kc calibrator for Drake 2-A and 2-C and noise blanker for 2-C. Want Drake 2B, R-4, R-4C, SPR-4 and SW-4 receivers. David Lowenstein, N7AF, 236 El La Jolla Drive, Tempe, AZ 85282

Parts list, pictorial for assembly, and schematic for Heathkit Model GW-11 CB transceiver. Henry Johnson, K4IPY, 7201 Capitol View Drive, McLean, VA 22101 (703) 356-4418

WANTED - TELEGRAPH & KEYS

JH Bunnell headset and other items. J.H. Jacobs, 60 Seaview Terrace, Northport, NY 11768 (516) 261-1576

Pre-WWII keys, bugs, books, catalogs, etc. Particularly looking for early land-line gear and telegraph office items. Gerry Maira, KA2MGE, 31 Prospect St., Fredonic, NY 14063 (716) 672-5389

T.R. McElroy "Mac Keys" (bugs), key boxes, one-tube code practice oscillators wanted for personal historical collection. Tom French, W1IMQ, "The McElroy Collector", 120 Great Road, Maynard, MA 01754

Unusual bugs (speed keys) such as tthe Brown Bros. Model CSA, and bugs made by Hunter (1960s). Also want early bugs by Boulter, Hulit, Albright, or any strange names. Interested in left-handed, vertical, or unusual configurations. Gil Schlehman, K9WDY, 335 Indianapolis ave., Downers Grove, IL 60515 (708) 968-2320

WANTED - LITERATURE

Transistor radio literature from 1954-1970. Looking for service manuals, original magazine ads, promo pamphlets, schematics, operating manuals, photos, original packaging, catalogs, etc. Have many of same items to trade or will buy your items. This is a personal educational venture. Thanks. Robert Ross, VA3SW, Box 1003, Stn. B, London, Ontario, Canada n6A 5K1

Schematic, alignment instructions for 67kc (background music) mulitplex adapter, as pictured in early 1960's Electronics magazine ads. Picture clearly shows Stancor sfmr, 6 tubes, 3 tuned circuits. Can't get mine to work properly. Will pay. Jim Farago, 4017, 42nd Ave. So., Minneapolis, MN 55406-3528

Schematics and any related data for Western Electric Model 3A receiver. Also need 4 UV199 sockets. Have 2 WD11 sockets for trade, like new. Tad Drogoski, 507 Coal Vallley Rd., Jefferson Boro, PA 15025-3703

Booklet "5 Meter Radiotelephony" by Frank Jones - 3rd Ed. brown cover. Has plans on building 5-meter transceiver with a single 19 tube. Lyman Wenger, K8YAM, 6364 Grand River Dr. NE, Ada, MI 49301

Citizen Radio Callbook Magazine for 1920, 1921, 1922. R. Arrowsmith, P.O. Box 166, Annandale, VA 22003 or call collect (703) 560-7161

Rider's Manuals: Volumes 22 and 23. Willing to pay premium price. Sam Faust, P.O. Box 94, Changewater, NJ 07831 (908) 689-7020

Rider's Manuals: Volumes 22 and 23. Willing to pay premium price. Sam Faust, P.O. Box 94, Changewater, NJ 07831 (908) 689-7020

Shortwave Craft magazines: June 1930, Feb, Apr, Aug, Dec 1931, July, DEc 1932 all with good covers please. Norman Wasson, 305 E. Lemon Ave., Arcadia, CA 91006 (818) 447-9377

WANTED - MILITARY

WWII radios, accessories, parts and manuals. BC-611, BC-620, BC-659, BC-1000 or TBY (walkie-talkie, handie-talkie, vehicular), also looking for book, "The Signal Corps: The Outcome". Ed Guzick, 916 Lenox Rd., Glen Ellyn, IL 60137 (708) 469-3183

ME73 alignment kit for BC659 WWII jeep radio. Cloyd Briley, 725 Christine Dr., Vacaville, CA 95687 (707) 447-5866

Want manuals of BC 222, RBM and DAG. Also want antenna for BC 222. John Field, 2335 Benton St., Santa Clara, CA 95050 (408) 246 1383

WANTED PARTS

Midwest Radio Corp. Model 162R console receiver chassis, circa 1942. Specifically need band selector switch assembly with special emphasis on the three six band tuning coil assemblies (front end, mixer and tuning). Also need all front panel knobs. Will pay shipping for up to whole chassis. Al Bowen, 7070 Rodgers Road, Pavilion, NY 14525 (716) 584-3747 (collect)

Acrosound TO-300, TO-350 and Trid HSM-186 audio transformers. Vitamin-Q capacitors. Jeffrey Viola, 784 Eltone Rd., Jackson, NJ 08527 (908) 928-0666

Old style mica capacitors, 5000 volts test and 2500 volts working. Four 470 pf and four 910 pf. caps measure approxmately 1 1/4 by 1 1/8 inches. Fenton Wood, KB5VQ, 109 Shorline Dr. SH, Malakoff, TX 75148

Bakelite dial/escutcheon, part number 03031 for Philco Model 70;Diagram for a Star Lite Model TD-820 9" Motorola TV; three controls (vertical hold, vertical linearity, video bias) P/N 18d67678A04 for same. James Maloney, 1703 Leno Rd., Macedon, NY 14502

Hinged push-buttons (8) or complete assembly for 1938 RCA 97K2 console; 1933 RCA 140 speaker and chassis; speaker for Philco 90 cathedral. Mark Cowart, N4FBL, P.O. Box 550766, Jacksonville, FL 32255-0766 (904) 724-1364

Looking for interstage transformers for Federal 59 and for Grebe Syncrophase MU1. Pria Carlo, Via Calvi, n.2, 20021 Bollate, Italy Phone 02 3561025, Fax 02 2046155

Metal anme tag, 2" X 3/4", for the front of the Atwater Kent (AK-12) type TA, 2 stage AF Amplifier (round can). Empty can (no top) with tag attached OK too! John Haught, KA3BRK, 5268 Webb St., Aliquippa, PA 15001 (412) 378-4026

National right angle drum dial similar to SW5; 4" Velvet Vernier like SW3 for completion of homebrew 1930's vintage regenerative receiver. Thanks for your help. Richard Cohen, 11802 Willow Pt. Way, Tampa, FL 33624 (813) 962-2460

Oscillator coil for Philco 38-12;Dial escutcheon and dial face for Philco 89; Dial assembly for GE S22A; Junker chassis for above models or any other help in obtaining these needed parts. Daniel Carella, W2ENV, 39 Mechanic St., Miburn, NJ 07041

Working chassis for Spartan Model 737 floor model. Willing to pay fair price. Nick Viania, 54 Neutral Avenue, Staten Island, NY 10306

WANTED - RADIOS

KLH FM table radio or clock radio in good condition. Will consider other similiar top quality sets. Don Nordenholt, 1509 Cliffbrook Drive, Plano, TX 75075 (214) 952-1111 (days)

Restorable Zenith wood table radios 6S27, 6S128, 6S137, 8S129 and 10S130. Basket cases and hopeless cases OK. Also need Western Electric horn and driver for Magnavox horn. James Fisher, 344 Harrison Ave., Manville, NJ 08835 (908) 725-7476

Restorable Zenith wood table radios 6S27, 6S128, 6S137, 8S129 and 10S130. Basket cases and hopeless cases OK. Also need Western Electric horn and driver for Magnavox horn. James Fisher, 344 Harrison Ave., Manville, NJ 08835 (908) 725-7476

Will pay big $$$ for General Electric console Model GM-125, a 1939 Model with FM. Jeff Lenardo, 1107 Logan St., Noblesville, IN 46060 (317) 773-3969

WANTED - TRANSISTORS SETS

Early shirt pocket transistor radios by Regency, Emerson, Toshiba, Sony, etc. Will pay your price for mint items. A.R. Nolf, VE3NLF, 539 Kastelic Pl., Burlington, Ontario, Canada L7N 3S9 (905) 333-4557

Any factory-made crystal set. Collection now at 305 pieces; seeking more. Especially want a perfect Federal Junior crystal set! Erwin Macho, Ambrosweg, 17/A/B, A-1230 Vienna, Austria

Early transistor radios with civil defense marks, from US or Japan. Gary Willoughby, 5930 W. Jefferson Blvd., Los Angeles, CA 90016 (310) 559-0706

MORSE NOSTALGIA

Gerald H. Wetzel, W3DMB

Reprinted from Northern California DX Club *DXer*, February 1992

Morse code has the potential for poetic rhythms. Iambic - as in iambic keyers - is from poetry, meaning the "di dah di dah di dah . . ." rhythm you get by squeezing both paddles.

A *QST* story from the '30s shows how certain phrases in CW generate poetic rhythms. I remember "best bent wire" sent at about 13 words per minute. It falls nicely on the ears.

Before electronic keyers, real "fists" could be heard on the air. There were "Lake Erie Swing" rhythms, with their long dahs. Then there were "bug" fists with dits at about 20 WPM but dahs slowed to whatever slower rate was wanted. Bug fists were practical; changing dit speed meant moving a little weight and you couldn't do it while sending.

The strangest fists were from those on straight keys who developed "glass" (i. e. injured) arms from too much sending. And some used "sidewiper" keys. These had no spring action for autoatc dots. Instead, they required you to wagle the key sideways, between two contacts, making your own dits and dahs. I worked only a few hams who used sideswipers, mainly French.

I still have my Vibroplex Blue Racer Original, in its leather-strapped case with an extra set of silver contacts. I got it at the 1972 Dayton Hamvention and used it regularly until 1980 when I finally switched to an electronic keyer.

CW has a mystique modern modes lack. But I feel no-code licensing has a place - attracting newcomers. Without them, the hobby will simply die out. If anyone needs more evidence, consider that the current average age of American hams is 47 and rising.

RALPH 124C 41+

Larry Babcock
8095 Centre Ln., E. Amherst, NY 14051

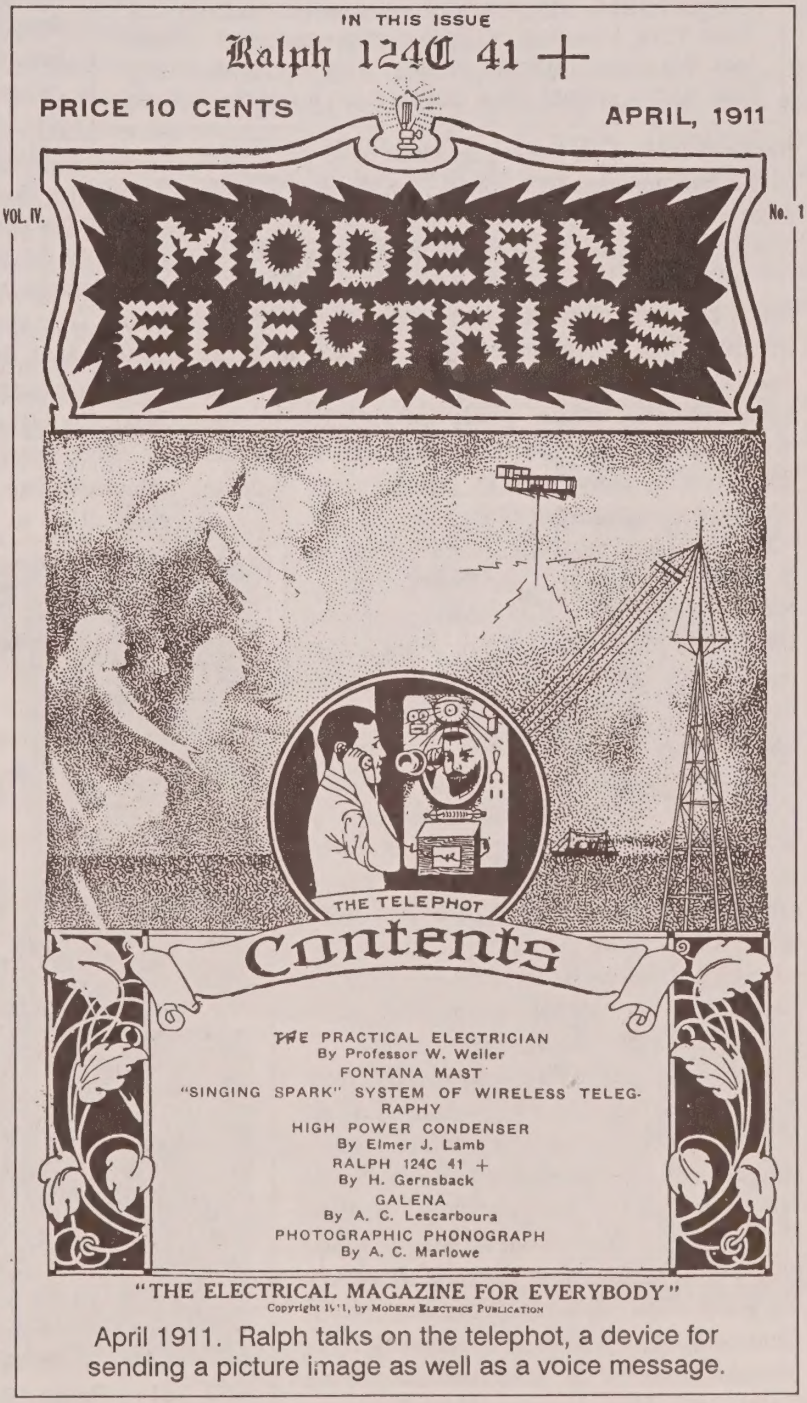
"Ralph 124C 41+," a series of 12 science-fiction articles by Hugo Gernsback, appeared in *Modern Electrics* magazine, starting with the April 1911 issue. Even at this early date Mr. Gernsback was a prolific writer of articles for scientific publications, and "Ralph" was more than the usual science fiction. It was Gernsback's prediction of the state of science and communication 750 years into the future, in the year 2660! In retrospect, these 12 episodes show an amazing comprehension of the future. Gernsback's error was that many of his predictions came true in less than 100 years!

In the story, only the 10 most famous men are allowed to use the symbol "+" after their names. Ralph is an eminent scientist. The opening episode finds him using his telephot (picture telephone), when he is inadvertently connected to a beautiful French-speaking woman named Alice 212B 423 in Switzerland. Ralph switches on his language-rectifier, which instantly converts her speech to English. Alice recognizes Ralph as a famous scientist and asks for his autograph, which he sends her on his telautograph set. (Remember, these predictions were made in 1911, when the telephone didn't reach farther west than Colorado or farther east than New Brunswick. Voice-modulated radio was still experimental and regular radio broadcasting didn't start for almost 10 years more.)

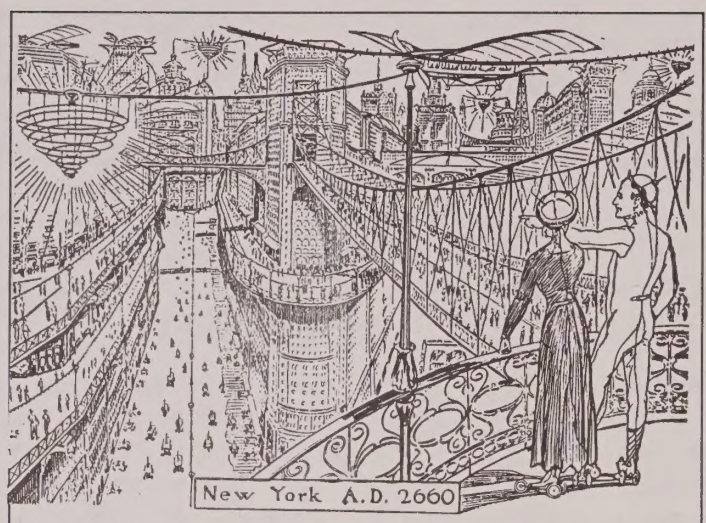
Ralph becomes infatuated with Alice. Continuing to converse with her, he learns that she has been snowed-in alone for five days in a villa in the Alps. Her teleservice line has just been reconnected, but the power mast and communico mast are both blown down, so no power or information can be sent her by wireless. When power is restored, she calls out sharply "Lux!" and the luminator fills the room with bright light (speech recognition foreseen in 1911!). On her second command the light intensity softens to an "exquisite pink glow." However, she is in danger from an avalanche.

Five pages of the second episode describe in great technical detail how Ralph, from 4000 miles away in New York, is able to save Alice from certain death by directing massive amounts of wireless energy to melt the onrushing snow. Besides making interesting reading, this wins Alice's lasting gratitude.

Life in the year 2660 is described in the third episode. Ralph lives in a crystal glass-brick house 650 feet high and 30 feet in diameter. Each floor is a round room. There is an electromagnetic tube elevator. From the roof one can see aeroflyers dot-



April 1911. Ralph talks on the telephot, a device for sending a picture image as well as a voice message.



August 1911. Ralph and Alice view the wonders of New York, traveling on "tele-motor-coasters." These are like powered roller skates. The antennas along their backs collect drive power from a nearby source.

transcontinental air liners pass close by to get a view of the famous scientist's house. Ralph himself is almost a prisoner here: his life is too valuable to allow him to take any form of risk, however slight.

Inventions in use include the tel-radiograph, which can send pictures to any point on the planet without wires. The menograph is used to print one's thoughts directly on paper. The inverse is the hypnobioscope, which sends information to the brain during sleep. Most persons read books and the morning newspaper in this manner; likewise with learning languages.

On the day after Ralph saves Alice from the avalanche, she and her father arrive in New York City via the newly completed subatlantic tube. This tube pierces straight through the earth to shorten the distance from France to New York. The vehicle is suspended and propelled by electromagnetic energy. At Ralph's home, Mr. 212B 423 and his daughter became guests in the laboratory. Here, in the presence of scientists and other guests, Ralph brings back to life a "radiumized" dog which had been killed three years earlier and preserved with rare gases and chemicals. On having his blood returned, the dog revives, none the worse for the experience.

Ralph takes Alice on a tour of 2660 New York. They see the spot where the last harnessed horse in New York had died in the year 2096. (I would say Gernsback was far conservative in this prediction! In 1911 he predicted horses would no longer be used for transportation in another 185 years. My guess is that, apart from hansom cabs in Central Park, trucks and automobiles replaced the horse in more like 30 years.) Ralph and Alice traverse New York on tele-motor-coasters. These are like electrically powered roller skates, driven by wireless energy from a sidewalk antenna system. At an electric restaurant they enjoy a meal of semi-liquid food provided through tubes. Then they travel by aerocab and play tennis at the National Playground. Later they visit the heliodynamophore plant, which is operated by the sun's energy, generating electricity to supply all light and power for the city of 200,000,000 residents. In the evening Ralph entertains Alice and other guests in his tele-theater, where they see and hear a new play originating live from an opera house four miles distant. (In this prediction Gernsback describes a form of television, but only with live programming and from a studio a rather short distance away, far more primitive than the standard of today.)

Ralph and his guests then tour New York by night. In a gift store they watch an automatic electric packing machine make a light-weight metal box to fit the purchase. A conveyer service delivers the package to the buyer's home in less than an hour. The party then travels in an aerocab up to 10,000 feet over the city to see the signalizers. These are searchlights used to signal to the airliners. Next the party watches an aerial carnival consisting of 6000 flyers in formation forming an immense American flag and other geometric figures. Finally they all go to Ralph's bacillatorium, where arctur-

Nov. 1911. Ralph 124C 41+, dressed for space flight.

ium rays are shot through the human body to kill germs, thereby greatly lengthening the lifespan.

The next episode finds Ralph and Alice enjoying a ride in an aerocab. Can you imagine Hugo Gernsback writing the following?

> By and bye their two other hands met and clasped and still further by and bye their lips met, and neither of the two spoke. In fact speech had become impossible, obsolete, both were electrified: every nerve in them tingled and pulled and vibrated. They were not sitting in an aerocab any longer. They floated in a rose-red sea of delicately scented emotions, in which time stood still. Their ears heard nothing but far-off sonorous chimes, ringing and singing in regular intervals - at least that is what it sounded like to them: what they did hear, or rather feel, however was the rhythmical beating of their hearts.

This environment bursts into reality when another aerocab approaches and asks assistance. It contains the villain Fernand 600 10. He is determined to win Alice's love by kidnaping her and racing away in a spaceship filled with hypnobioscope reels, books and instruments to entertain her. He plans a three-month trip to entice and win Alice from Ralph.

When Ralph revives from the attack he rushes to his laboratory and prepares to search for Alice. He blasts off in pursuit. At this point in the story, Gernsback describes space flight in great detail, including navigation principles, weightlessness, and the appearance of the sun and planets in space. Ralph finally intercepts Fernand's space ship, overpowers the villain, and rushes to find Alice - but she is not on board!

It turns out that this is more than a love triangle: it is a *rect*angle! The third man is a despicable Martian named Llysanorh. Ralph reasons that Llysanorh would first have to go to Mars and be married to Alice. He would then find a place to hide in space. Venus is too hot but the asteroids are perfect. There are over 4000 of them and Ralph could never search them all. Ralph has to intercept Llysanorh before he reaches Mars!

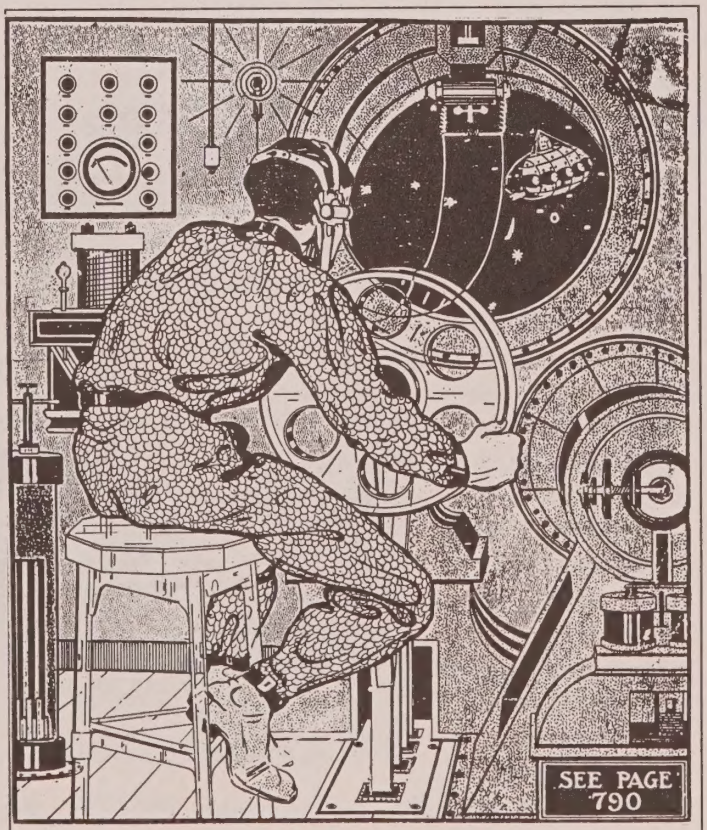
Ralph's space ship can travel at a top speed of 90,000 MPH. This is a bit faster than Llysanorh. Ralph calculates he will reach the other ship in time, but his later observations show Llysanorh to be going faster. Ralph will not reach him in time. Ralph conceives the idea of making his ship appear to be a large comet by generating large amounts of gases and dustlike particles. He then heads the ship directly toward Mars to make the Martians think they are about to be struck by a comet. Ralph reasons that the Martians will ask Llysanorh to head back toward the comet and deflect its path a few degrees so that it will miss Mars. This would allow Ralph to catch the villain in time.

The scheme works. Ralph overpowers the other space ship and rushes in to find his beloved Alice. He discovers her stabbed, bleeding and unconscious. He picks her up and rushes her to his ship.

Ralph is in agony with the thought that Alice is dead, when he remembers his experiment with the dog. He had drained all blood from the animal and left it in a dormant state for three years before reviving it. Perhaps he can do the same with Alice, until he can travel the 69 days back to Earth where she can be revived. There are many problems to overcome, but ultimately the plan works. Ralph and Alice are reunited. Only then is the significance of Ralph's name revealed: Ralph 124C 41+, or Ralph, *One to Foresee for One*! Yes, Ralph had indeed foreseen how to devise fine inventions and overcome his enemies.

Now, this is only a synopsis of the story of Ralph. Much was omitted in extracting the story from the original length of about 60 pages. Gernsback described the science of the future in great detail, and one tends to view the story as a prediction of the future from today rather than from the primitive setting of 1911 when the airplane had just barely been invented, the auto was only a semi-practical toy and radio (wireless) was just beginning to be used commercially.

I hope this article has whetted your appetite to read the entire story of Ralph. Unfortunately, it is not easy to find. Perhaps the best approach is to



February 1912. Ralph prepares to intercept Llysanorh near Mars and rescue his beloved Alice.

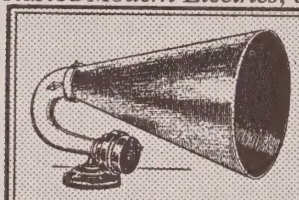
find someone with the original issues of *Modern Electrics* and borrow them. They are the 12 consecutive issues from April 1911 (Vol. IV No. 1) to March 1912. Good luck in your hunting!

HUGO GERNSBACK

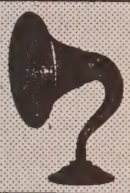
Hugo Gernsback was 26 when he wrote "Ralph." He had emigrated from Luxembourg to the U. S. at the age of 19, changing his name from Gernsbacher. His first major venture was to form the Electro Importing Company to obtain electrical and wireless equipment from Europe and sell it here. He wrote descriptions of his products in the E. I. Co. catalogs, including short articles describing how they worked. These were his first publications. In April 1908, he started *Modern Electrics*, a magazine devoted to the theory and construction of wireless equipment.

Gernsback wrote "Ralph" as a space-filler. It later proved to contain accurate predictions of such devices as radar, television, tape recording, and night sports games.

"Ralph" was reprinted in a hardcover version in 1925 and in the 1929 winter issue of *Amazing Stories Quarterly*. It was later released in a soft-cover edition, and has been reprinted in the Niagara Frontier Wireless Association *Chronicle*, in the Fall of 1983 through Summer 1986 issues. NFWA made this reprint with the approval of Hugo's son, Harvey Gernsback. Despite these various reprints, "Ralph" remains a rare item, but is a topic in which any collector of historic radios should be conversant.



THE LOUDSPEAKER



EDITED BY
FLOYD PAUL, W6THU
1545 Raymond, Glendale, California 91201
All correspondence requires SASE for reply

ARKAY LOUD SPEAKER

In January of 1922 Riley-Klotz Mfg. Co. of Newark, N. J. advertised they were making an "Arkay" radio horn loud speaker. Claims made by the manufacturer in early spring of 1922 were: (1) fits any make receiver (earphone) by use of a flexible adapter under the base, (2) works on one or two stages of amplification, (3) furnished in black enameled finish for $5.00 or full nickel $6.00 and (4) will amplify any signals without distortion. Shipping weight was advertised at 4 lbs., which makes it one of the lightest weight horns. Within three months their advertisements clarified the units were sold at the above prices, less phones and the full nickel description was changed to polished nickel.

By mid -year of 1922, Arkay radio product ads by Riley-Klotz Mfg. Co. were highlighting their other products such as variable condensers, crystal detector holders, vernier adjusters and phonograph attachments. By the end of the year horn advertising stopped. It is believed the horn did not sell well. Only a few horns have shown up in collector's hands. John Terrey's Horn Speaker Survey article (along with the author's participation) in 1989 showed only two Arkay horns were reported.

The distinctive "oil can" base of the horn is unique and its curly horn shape is similar to the "Vocarola" which was being announced in the same time frame.

The reader should be reminded that the Arkay horn was produced early when less than a dozen manufacturers were marketing horn products.

ANNUAL CONFERENCE

The Antique Wireless Association

"An amateur organization devoted to the history of wireless"

THRUWAY MARRIOTT, ROCHESTER, NY, SEPT. 21-24, 1994

WELCOME BACK! At our 33nd annual conference, collectors and history enthusiasts will convene, exchange equipment, and learn more about the development of radio and electronics. If you have never been to our yearly "reunion," why not give it a try? Rochester (Henrietta) is just north of upstate New York's beautiful Finger Lakes region, easily reached by car or plane. The site is 26 easy miles from the Museum at Bloomfield.

Advance registration is encouraged. This will allow preassembly of registration material for quick check-in, and preassignment of flea-market spaces. Preregistration, using the enclosed card, can be made through Richard Ransley, Box 41, Sodus, NY 15441 before Sept. 7. Unlimited registration at the door.

The Thruway Marriott is a full-sized, full-service hotel. It offers special nightly rates ($78 single, $88 double, $90 triple, $100 quad) up to August 23. For info or reservations, call (716) 359-1800. The Marriott has high-quality restaurant facilities, and other lodging and eating places are nearby.

The hotel is reached from Exit 46 of the New York State Thruway (I-90): take I-390 north to NY 253 west, to NY 15 south. For visitors arriving by air, the location is about seven miles or 15 minutes from the airport. There is shuttle service, 7 AM - 11 PM (specify the *Thruway* Marriott).

The special theme for this year is **"Radio in WW-II And 150 Years of the Telegraph."** The Book Fair is again expanded to three days.

Conference Chairman:	Bill Fizette
Program Chairman:	Lauren Peckham
Contest Chairman:	Ralph Williams

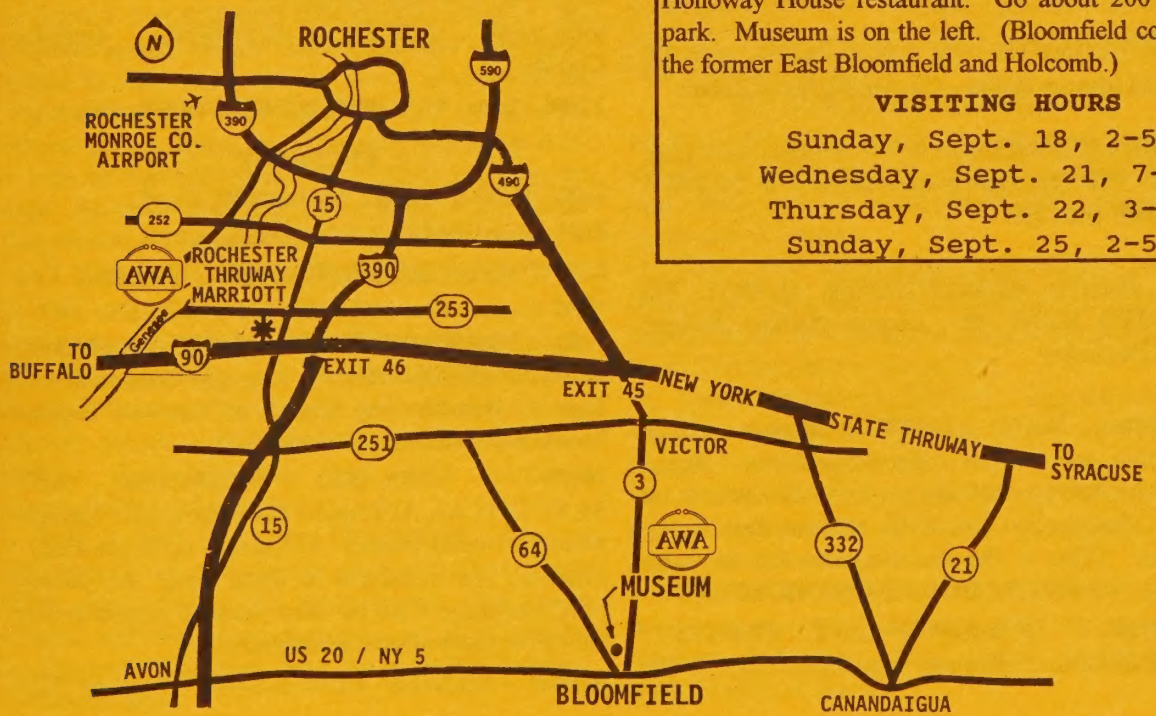
AWA ELECTRONIC COMMUNICATION MUSEUM

Village Green, Bloomfield, NY

See the area map. Directions from the hotel: turn right (south) on NY 15. At Avon (9.5 mi.), turn left (east) on NY 5/US 20. At Bloomfield (16 mi.), turn left at the brown "Radio Museum" sign near the Holloway House restaurant. Go about 200 ft. and park. Museum is on the left. (Bloomfield combines the former East Bloomfield and Holcomb.)

VISITING HOURS

Sunday, Sept. 18, 2-5 PM
Wednesday, Sept. 21, 7-9 PM
Thursday, Sept. 22, 3-5 PM
Sunday, Sept. 25, 2-5 PM



SUNDAY

2:00-5:00 PM - MUSEUM open.

WEDNESDAY

6:00 AM - FLEA MARKET opens (through 5:00 Saturday). Food service will be available on-site.

6:50 AM - SUNRISE.

8:00-5:00 - REGISTRATION for Conference - Assembly Corridor (see hotel floor plan).

2:00 - SWL HISTORY, with discussion leader Bart Lee - Iroquois Ballroom.

4:00 - KEY & TELEGRAPH, session moderated by leading key collector Murray Willer, VE3FRX - Iroquois Ballroom.

7:00-9:00 - REGISTRATION - Assembly Corridor.

7:00-9:00 - AWA MUSEUM open at Bloomfield.

THURSDAY

8:00-9:00 AM - CHECK-IN of equipment for Communications Equipment auction - Cayuga-Mohawk Rooms.

8:00 - BOOK FAIR (to 5:00) - Pre-assembly Court.

8:30-12:00 - REGISTRATION - Assembly Corridor.

9:00-11:00 - AWA MUSEUM open for bus tour and those who wish to drive.

9:00 - COMMUNICATION-EQUIPMENT AUCTION - Cayuga-Mohawk Rooms. Col. Ed Gable, K2MP, auctioneer. Post-1930 communications equipment, such as receivers and transmitters by National, Hallicrafters, or Hammarlund. No bidding card needed; sales are seller-to-buyer. **NO ITEMS CONTAINING MERCURY**

10:30 - THE REAL STORY OF THE MAGNETRON, with Ed Lyon - Cayuga-Mohawk.

1:00-5:00 PM - REGISTRATION - Assembly Corridor.

1:00 - HISTORY OF THE TELEGRAPH, with Bill Holly and Murray Willer - Cayuga-Mohawk Rooms.

2:30 - BUS DEPARTS for AWA Museum from front of hotel. One trip, signed-up in advance at the AWA registration desk, $5.

3:00 - RADIO RESTORATION, HI-BOY TO ATWATER KENT 49 - Cayuga-Mohawk Rooms. by Bob MacIntyre.

7:00-10:00 - MAIN AUCTION check-in, bidder registration, and preview - Onondaga Room. Registration and bidding card are good for all auctions on Friday. Registration fee of $2 credited toward any purchase. (This is the check-in time for the main auction.). **NO ITEM CONTAINING MERCURY!!**

7:00-10:00 - OLD-EQUIPMENT CONTEST: check-in of entries - Henrietta Ballroom (Salons A, B). This is the time to bring in displays.

FRIDAY

8:00 AM - AUCTION PREVIEW (bidder registration and preview only) - Onondaga-Seneca Rooms.

8:00 - BOOK FAIR - Pre-assembly Court (to 5:00).

8:00-11:00 - Equipment Contest judging - Henrietta Ballroom.

8:30 - ANNUAL SIGHTSEEING EXCURSION, tour and lunch ($49). Meet in the hotel lobby.

8:30-NOON - REGISTRATION - Ass'y Corridor.

9:00 - VACUUM-TUBE AUCTION - Iroquois Ballroom. Col. Bruce Roloson, auctioneer.

10:30 (±) - PAPER-COLLECTABLES AUCTION, continuing from tubes.

11:00 (±) - NOON - GENERAL AUCTION, continuing from paper collectables; includes gear donated to support Museum maintenance.

11:00-NOON - EQUIPMENT CONTEST entries open for viewing - Henrietta Ballroom.

1:00-4:30 PM - GENERAL AUCTION continues.

1:00-5:00 - EQUIPMENT CONTEST viewing continues - Henrietta Ballroom.

1:00-5:00 - REGISTRATION - Assembly Corridor.

4:00 - AMATEUR RADIO ACTIVIES - with Bob Raide, W2ZM , Review of OT contest, etc.

6:30 - HAPPY HOUR - Preassembly Court.

7:00 - CONTEST-AWARDS DINNER - Iroquois Ballroom. Cash bar available. Special program by Music of WW-II with pianist Ed Clute with the "New Andrews Sisters"

9:00-11:00 - EQUIPMENT CONTEST viewing continues - Henrietta Ballroom.

9:00-10:00 - AUCTION PAYMENT - Assembly Corridor.

11:00-12:00 - EQUIPMENT CONTEST pickup.

SATURDAY

8:00 - BOOK FAIR - Pre-assembly Court.

8:00 - EQUIPMENT CONTEST pickup.

8:30-NOON - REGISTRATION - Assembly Corridor.

9:00 - PRESERVING AN ORIGINAL MASSIE WIRELESS STATION - Cayuga-Mohawk-Oneida Rooms. Bob Merriam director of The New England Museum of Wireless and Steam.

10:30 - PRE-1912 WIRELESS AND ELECTRICAL APPARATUS DISPLAY - Cayuga-Mohawk-Oneida Rooms. Moderated by Bruce Kelly . Members are encouaged to bring items and provide brief decription, Prize for most unusual, judged by Ray Hutt from theSmithonian Institution.

NOON - LADIES' LUNCHEON - Iroquois Ball-

1994 AWA CONFERENCE - EASY REFERENCE

	WEDNESDAY SEPT. 21	THURSDAY SEPT. 22	FRIDAY SEPT. 23	SATURDAY SEPT. 24
6:00	Flea Market Open			
8:00	Registration Open	Book Fair; Checkin for Comm.-Eqpt Auction	Auction Preview; Book Fair; Contest Judging	Book Fair; Contest Pickup
8:30		Registration Open	Annual Excursion; Registration Open	Registration Open
9:00		Comm.Eqpt. Auction; Museum Open	Tube Auction	Massie Station
10:30		Real Magnetron Story	Paper Auction	Pre-1912 Wireless Equip & ECT.
11:00			General Auction: Contest Viewing	
12:00				Ladies' Luncheon
1:00	Registration Open	History of Telegraph; Registration Open	General Auction; Registration Open	
1:30				WW-II Military
2:00	SWL History	Bus to Museum;2:30		
3:00		RADIO Restoration		WW-II Radio Newscasts
4:00	Key & Telegraph		Amateur Radio	
5:30				Mixer
6:30			Mixer	
7:00	Museum Open; Registration Open	Main Auction Checkin; Contest Checkin	Awards Dinner; "Andrew Sisters" WW II Music	Grand Banquet
9:00			Contest Viewing; Auction Payment	
11:00			Contest Pickup	

room. Luncheon chaired by Debbie Roloson with entertaining program, plus gift drawings.

1:30 - WW-II MILITARY EQUIPMENT- Collecting and Restoring Cayuga-Mohawk-Oneida Rooms. By Ludwell Sibley

3:00 - **RADIO DURING WW-II, NEWS-ENTERTAINMENT- PROPAGANDA** Featuring Original Recordings BY Gary Yoggy

5:30-7:00 - MIXER - Pre-Assembly Court. Members can relax with conference speakers, AWA staff, etc. Cash bar.

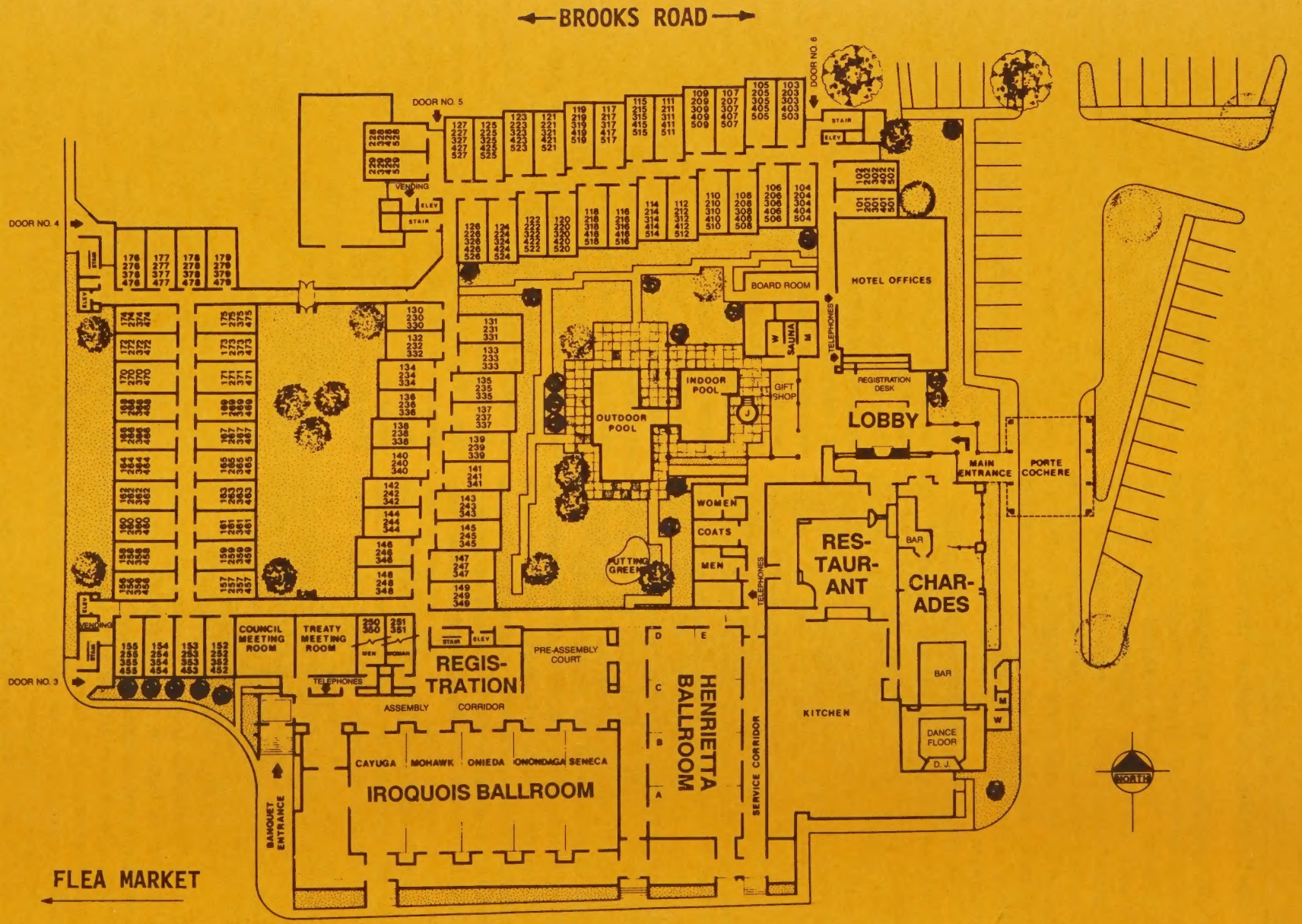
7:00 - GRAND BANQUET - Henrietta Ballroom. Bruce Roloson, M. C. Major Awards An evening of fun and fellowship.

SUNDAY

2:00-5:00 PM - MUSEUM open.

ANNUAL SIGHTSEEING TOUR

A fun excursion is planned for Friday, to the foot hills of the Finger Lakes for a walking tour of the magnificent Watkins Glenn, with lunch at the well known Castel Grisch Restaurant over-looking Seneca Lake and a tour of Glenora Wines which has one of the most beautiful views of the Finger Lakes. Cost: $45, including transport, admissions, luncheon, taxes, tips, etc. Sign up early at the AWA registration desk.


BROOKS ROAD
MAIN ROAD - NY STATE 15
FLEA MARKET
DOOR NO. 3
DOOR NO. 4
DOOR NO. 5
DOOR NO. 6
VENDING
ELEV
STAIR
COUNCIL MEETING ROOM
TREATY MEETING ROOM
MEN
WOMAN
TELEPHONES
REGIS-TRATION
ASSEMBLY
CORRIDOR
PRE-ASSEMBLY COURT
CAYUGA
MOHAWK
ONEIDA
ONONDAGA
SENECA
IROQUOIS BALLROOM
HENRIETTA BALLROOM
SERVICE CORRIDOR
BANQUET ENTRANCE
KITCHEN
BOARD ROOM
HOTEL OFFICES
INDOOR POOL
OUTDOOR POOL
SAUNA
GIFT SHOP
REGISTRATION DESK
LOBBY
MAIN ENTRANCE
PORTE COCHERE
WOMEN
COATS
MEN
PUTTING GREEN
RES-TAUR-ANT
BAR
CHAR-ADES
DANCE FLOOR
D.J.
NORTH

THE OLD-EQUIPMENT CONTEST - 1994 AWA CONFERENCE

Ralph Williams, N3VT
30675 Main R., Orient, NY 11957

1994 celebrates two themes: **150 Years of Telegraphy**, and **The Half-Century Since World War II**

The categories for the 1994 AWA Old-Equipment Contest are in three groups: Theme, Standard and Craftsman. The Theme categories cover the Conference's two foci, the telegraph and WW II. The Standard categories are for exhibitors bringing items from their collections rather than preparing something special for the annual theme. The group of categories, Craftsman, that began last year lets the craftsmen among us show their special skills in conservation and restoration.

THE MORSE TELEGRAPH CATEGORIES

1. EARLY WIRE TELEGRAPH EQUIPMENT. Extensive, point-to-point, electrical communication became practical when Samuel F. B. Morse combined scientific discoveries (electrical) with language concepts (coding). While emphasizing the processing of intelligence, he realized the need for practical electrical devices to prove his communication method. Alfred Vail was skilled in concepts and translating them into electromechanical hardware. Morse and Vail reduced the new system of communicating at a distance to practice. For this category the ideal entry would be an original Vail Correspondent or one of the Morse-type sticks. Even if these items are not in your collection (!), enter something that will tell about an early development of the electric telegraph. Don't forget the competition, e. g., House or Wheatstone. An excellent entry would be a typical 1800s operating telegraph office loop. Another would be a model of the Baltimore-Washington line. Displays of sounders, registers, relays or keys are welcome, but small items must be fastened or cased.

2. EARLY TELEGRAPH DOCUMENTATION. The telegraph system and its vicissitudes have been documented by many observers. A display of books on the telegraph and its contribution to the U. S. communication revolution would be very acceptable here. A copy of Vail (1845) or Reid (1879) would set the stage. An entry of telegraph advertising or service announcements will make for a real contest.

THE WORLD WAR II CATEGORIES

3. THE SOLDIER'S RADIO. The radio was an important morale factor to soldiers, especially overseas. Some radios were designed for this use (Hallicrafters, Zenith). Others were adapted from commercial and amateur service. Still others were recovered from military operations that had been completed (successfully or otherwise).

4. THE RADIO THAT STAYED HOME. The war used virtually all of America's electronic effort. Some radios were built for the home market, others were adapted, and many received repair parts never intended by designers. Sets that "kept the home fire burning" are needed here.

5. MILITARY RADIO EQUIPMENT. This category is broader than its name suggests. A complete radar would be a good entry if it fitted our space. Main parts of the radar, a radio transmitter, airplane gear, or other electronic devices (coding machines or spy equipment) are welcome. If you bring a Gibson Girl, be sure she has her auxiliaries, e. g., the canvas case, kite, and balloon.

6. DOCUMENTS ABOUT RADIO IN WW II. Entries in this category can range from advertisements, Tech Manuals, propaganda, or military communications, to clandestine operations. The entry should relate something that occurred in wartime that is important to you. How about a set of pictures of your attending a Radio School at Fort Monmouth?

7. PROGRAMS FOR OUR FORCES. Much of the entertainment industry focused on producing programs and shows for the men and women serving our country. The USO played a big part, as did the Armed Forces Radio Service. Entries showing what was available are for this category. Real programs, played back to contest viewers, would be very effective - Tokyo Rose would bring back memories for Pacific veterans.

8. FOREIGN WARTIME RADIOS. While America made great use of electronics in the war effort, the other participants were busy with communication equipment of all kinds and uses. This category includes foreign gear that played a part in WW II.

9. TUBES FROM WW II. The period just before and during the conflict saw great advances in tube application. The VHF, UHF and microwave spectrum saw advances in high-power devices. An entry on the development of a war-time tube from its predecessors would be a fine display. CRTs would be pertinent. How about a Zahl tube?

THE STANDARD CATEGORIES

10. PASSIVE RECEIVERS. Any detecting device, not including vacuum tubes or solid-state amplifying devices, whose purpose is to convert radio energy into intelligence is sought.

11. ONE- AND TWO-TUBE RECEIVERS. Any receiver which uses one or two tubes for any of its functions fits here. A tube having multiple electron streams in one envelope counts as one tube.

12. THREE-TUBE RECEIVERS. The detector/two-stage is most often found here, but reflexes and special-circuit sets are sought.

13. FOUR- AND FIVE-TUBE RECEIVERS. Three-dialers, electric radios with some special feature, and others will be welcomed.

14. SIX- OR MORE TUBE RECEIVERS. Superhets are the usual entries, including most communication receivers, but many others qualify, especially the electric radios of the '30s.

15. SPARK TRANSMITTERS AND ARTIFACTS. Do not hesitate to enter a major piece of spark equipment if you think it is rare or significant.

16. VACUUM-TUBE TRANSMITTERS. Some of the sets for this class are old, some not so old, most home-built. Entries have been predominantly amateur-operated, but commercial equipment is welcome.

THE CRAFTSMAN CATEGORIES

17. RESTORATION OF APPEARANCE. This category is to display examples of rebuilding and refinishing the cabinets and containers that housed a radio receiver. No particular kind or size of set is required. A description of the work done will be considered an important part of the entry. The critical element is appearance, including woodwork, escutcheons, dials, knobs and other visual details

18. RESTORATION OF OPERATION. This category is for craftsmen who artfully substitute modern parts for old failures. The new electrolytic in the old can is a starting example, or the transistorized tube, or the replacement of potmetal parts by silver-gray colored epoxy castings. An entry should be accompanied by documentation showing the basis of the updating while preserving the quality of the original.

19. NEW-FOR-OLD. Over the years we have had special equipment and devices that did not pretend to be old. Each was a construction using functional parts to perform a task directly related to radio history. A excellent entries in this category were the scanning TV system entered two years ago. and last year's Federal Superhet. Imagination, craftsmanship and effective operation are the main judgment values here. The entry should be something that might have been, or should have been, or perhaps *was* produced long ago.

LODGING AND FOOD

While the Marriott is clearly the most convenient location, other accommodations are available, north of the hotel on or near NY 15. In order of closeness:

0.6 mi: Day's Inn, (716) 334-9300
0.8 mi.: Red Roof Inn, (716) 359-1100
1.0 mi: Microtel, (716) 334-3400
1.0 mi: Highland Motor Inn, (716) 334-4280
1.1 mi: Super 8 Motel, (716) 359-1630
1.9 mi: Dorkat Motel, (716) 334-7000

FLEA MARKET

AWA made several improvements in the flea-market operation. Learning from that experience, plus taking into account all comments from the membership, the Conference Committee has made the following plans for 1994.

First, the market will run only in conjunction with the Conference dates from Wednesday morning to Saturday afternoon. *No* flea-market sales will take place at the hotel parking lot prior to Wednesday. The flea-market area will be sealed off, unavailable to anyone until the gate opens at 6:00 AM Wednesday. The prohibition of non-conference flea marketing is a matter of hotel rules and our Special Use Permit required by the Town of Henrietta. **NO ITEMS CONTAINING MERCURY!!**

Second, there will be only one class of site. All sites are treated the same and are issued randomly on a first-come-first-sold basis. Each member may pre-register for one or two sites, at $20 for the first and $35 for the second. Two sites to one member will always be adjoining. Pre-registration is highly recommended to assure a pre-assigned, numbered spot on the paved area. Everyone wanting to participate will get a spot. However, the paved-area, pre-numbered spots will probably sell out during the preregistration period. At that point we will start assigning spots on the grass on the Thruway side of the parking lot.

Third, flea-market headquarters will be located at the entrance to the market. Look for the big banner. This will be a full-service area where one can pay membership dues and registration fees, and sign up as a flea-market seller. **Everyone needs to register for the Conference - the flea market is only a portion of overall Conference activities. A non-member wishing to sell in the flea market is welcome to join, paying $12 dues, $13 Conference registration, and $20 for the first site.**

Some restaurants in the area are Petals' at the Marriott and the Cartwright Inn, south of the hotel on NY 15. Fast food (Perkins, Burger King, etc.) is available in the motel area.

RULES AND CONDITIONS

EVENTS: Admittance to any activity, flea market included, requires a registration badge.

FLEA MARKET: Opens 6:00 AM on Wednesday. **NO ITEMS CONTAINING MERCURY** New York State sales-tax forms will be available; AWA not responsible for sales or tax. Neither AWA nor the Marriott is responsible for security of personal property in the flea-market area. We are asked to confine market activity to the designated area; in particular, to avoid the NY State Thruway right-of-way. KOA and other campgrounds are available in the vicinity. *No overnight sleeping in the flea-market area.*

AUCTIONS: 10% of all auction sales donated to AWA. AWA not responsible for tax or merchandise on any auction. AWA reserves the right to refuse nonconforming items. New York State law forbids an auction seller bidding on his own material. **COMMUNICATIONS EQUIPMENT AUCTION**: *Comm gear only, please*; no test equipment,**NO ITEMS CONTAINING MERCURY** broadcast items, literature, parts, or other unrelated items. No limit on number of items. **TUBE, LITERATURE, AND GENERAL AUCTIONS**: No consoles, **NO ITEMS CONTAINING MERCURY**,boxes of magazines, non-"antique" items, or junk. Up to three items or lots of items per person (one piece of test gear max.) for the general auction, and five items or lots of items for the tube auction. For tubes, early types are preferred. Indicate if the filaments are good. Please remove bulky outer wrappings so potential bidders may view tubes. Place grouped items in a box, or tie together with tape, rubber bands, or string. Please remove equipment from the auction room by 6 PM.

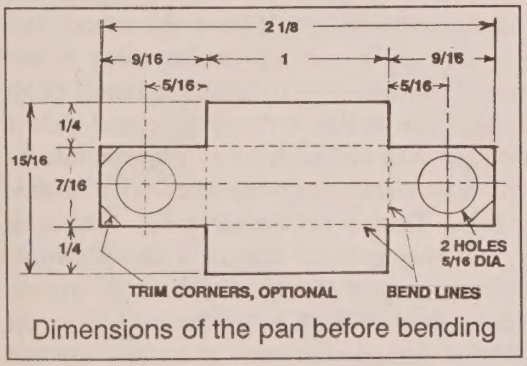
MAKE YOUR OWN GRID-LEAK DRIP PAN

Bob Dennison, W2HBE
82 Virginia Ave., Westmont, NJ 08108

Does the constant dripping of your grid leak distract you when you're trying to work some rare DX or listening to your favorite short-wave station? Back in the good ol' days, the Muter Co. distributed a neat little Grid Leak Drip Pan. Unfortunately, these are no longer available. But, cheer up, here are details on making your own drip pan to stop that annoying problem forever.

You'll need only some thin metal - I used 0.012 aluminum garden edging but almost any thin sheet metal will do. Inscribe the metal with the design in the drawing. Drill the holes, cut with snips along the outside lines and bend up the sides. You can paint your pan a favorite color and label it with your name or call letters. If it is to be a gift, you can add your friend's name. I used white Dri-Transfer decals on black paper, reduced in size on a xerocopier and cemented in. A jeweler's ring-size gift box makes a nice presentation case. Replace the ring-support material with a piece of foam with a cutout for the drip pan. The photo shows two recreated grid-leak pans, along with a genuine Muter unit, with the method of labeling and the presentation box.

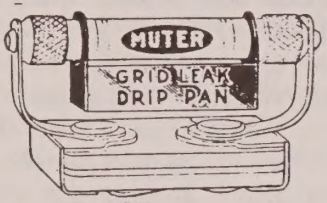
A novice might ask whether such a small tank might overflow in long use. I've never seen this occur, and none of the experts I've talked to have ever experienced this problem. Remember, electrons are tiny, and it would take trillions of them to fill a thimble. I am confident that your homemade drip pan will perform as well as the famous Muter invention.



Dimensions of the pan before bending

Muter Grid Leak Drip Pan

Uniform Leakage [Maybe]



Automatic Control [Perhaps]

The tremendous strides of radio during the past year are only exceeded by this remarkable invention. No single radio item has ever been able to accomplish so much, in doing so little. The ability of the Grid Leak Drip Pan to perform as well as anticipate irregularities in the remote parts of the set with which it is not connected is almost beyond human comprehension. In fact, the inventor himself could never advance any real necessity for its use.

The exact value of the grid leak has always been a question amongst authorities and yet this simple device settles the question for all time. Consider a two megohm grid leak installed with a Muter Grid Leak Drip Pan, in a position requiring a three megohm grid leak. One megohm immediately drips into the pan which with the value of the grid leak itself gives the proper value of three megohms, as the Pan easily understands the conditions and being very industrious maintains this position in spite of the laws of electricity, which it takes particular delight in upsetting without, of course, spilling its vague contents and vice versa.

While testimonials have been rather slow in coming in, we feel confident that a trial on your part will readily substantiate the great merit of this device. While your grid leak might, again it might not. Who can tell? With weather here, this is at least a conservative sound and logical investment by which you alone can prove the numerous shortcomings of the device. As production will be limited to ten percent of the Television Sets made this year, we suggest your early action, although there will probably be a great surplus.

We hope that this remarkable invention will give you as much fun as we derive from offering it.

THE MUTER COMPANY

1255 South Michigan Avenue Chicago, Illinois, U.S.A.

Manufacturers of

Armored CANDOHM Resistors

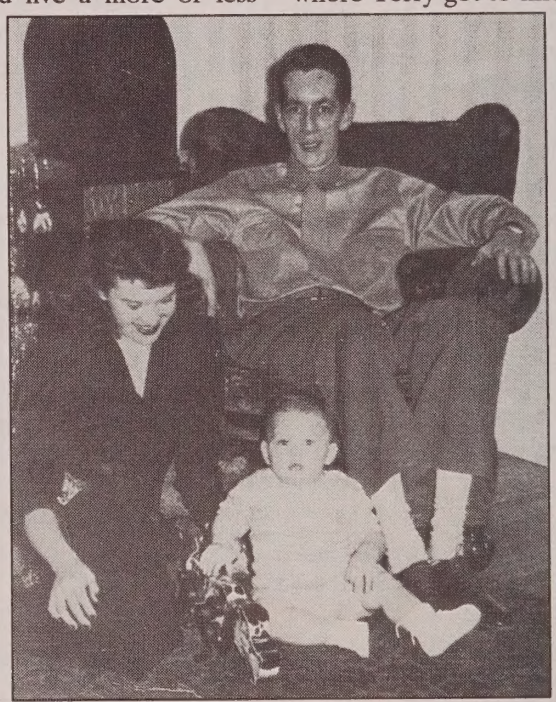
A Muter drip pan (right) with two recreated ones - one of them ready for gift-giving.

"TERRY'S FIRST RADIO"

Mike Adams
112 Crescent Ct., Scotts Valley, CA 95066

It's Christmas, 1943. See the happy family. Meet Ruth, Karl, and baby Terry Hackney. See the Philco cathedral on the table next to Karl. What follows is a true story about the radio and how it would influence for life the person who would someday own it. This is the story of Terry's First Radio.

Newark is a city in central Ohio of fewer than 50,000 folk. In the 1940s it was 34 miles east of Columbus, but that was before freeways and urban sprawl. Now their boundaries practically touch. Anyway, Terry Hackney was born there in March, 1943, in his grandparents' apartment. Mother Ruth was working in a war industry and father Karl was somewhere in the European war theater. When his time was up and he returned for the holidays, little Terry would be the main present. From that time forward, the Hackneys would live a more or less peaceful life in the emerging middle class. Karl would take over his father's grocery store and Ruth would stay home to raise Terry and his soon-to-arrive brother and sister.



Postwar prosperity. Being in the middle class would have a predictable effect on the Hackneys. They would move out of Grandma's place and buy a small tract house, an electric refrigerator, an Oldsmobile, and several new radios. So by the late '40s Terry, now a curious seven-year-old, would inherit the Philco. Of course, most kids would get their parents' old radios, and most would put them next to their beds for kids' shows after school, and drama and comedy after dark. Terry would be different. By the time he was in the fourth grade, he would know more about how that old Philco worked than any other kid in his class. Terry was rapidly developing interests that, as a grown-up, would cause him to be known as a "Radio Collector."

Terry does not remember the condition of the Philco as turned over to him. He doesn't recall model numbers or tube line-up. He does remember that, because he wanted to listen after his parents thought him asleep, he found it necessary to connect an earphone in place of the speaker in the set. This early experiment left an indelible impression on the young fellow, an event still known as "Terry's First Big Shock." Imagine that you are seven years old and you have given yourself the task of connecting an earphone which has two wires to a loudspeaker with four. Fortunately, he had been checking out radio books from the local library and, soon after the shock, he learned how the magnet on the speaker was really the choke of the B+ supply.

The truth was, the Philco wasn't that much of a radio. It was neither sensitive nor selective, and it lacked short-wave, even though it did get the Newark Police at the high end of its tiny yellowing dial. In the early '50s it would fail altogether and go down in Hackney history as the first of hundreds of radios to be dismantled in the name of curiosity. Soon came the daily visits to the local repair shops, Gray Radio and Cherry Street Crystal Radio Shop, where Terry got to know the repairmen, and by being a real pest, he was allowed to cart home in his red wagon, anything he wanted from the junk pile.

The 1950s would be known as Radio Heaven. By junior high, Terry's room was filled with radios - a few operating, but most needing at least one tube or capacitor (back then known as a condenser). He met fellow kids who were also into the hobby, and together they began to experiment with radios by tearing them apart and using the good parts to fix other sets.

In the mid-'50s Terry Hackney moves with his family to Cambridge, Ohio, and begins high school. There, because of his obvious passion for radio and electronics, he is branded a nerd. He doesn't play sports or go out with girls but he is a whiz with a soldering gun. He is always tinkering with the ancient school PA system, he is the president of the Projectionist Club (ooohs and aaahs), and he is the school disk jockey, presenting music for dances using homemade mixers, amplifiers, and speaker cabinets of his own design. He builds a transmitter and puts a station on the AM dial in order to play records for his high-school classmates while they drive around in their cars. Terry is on the air daily. Within six months, this very popular station is shut down by the chief engineer of the local station. Terry remembers his mother Ruth being threatened by the usual $20,000 fine and ten years in prison. She had

no choice but to pull the plug on Terry.

After graduation in 1960, Terry goes to Ohio University in Athens and gets a job at the local radio station, WATH-AM. Again, he spends all his time at the station, where he reads news in the morning, plays records from 3 PM until sign-off at sundown. He even rewires the board, sweeps out the station, does production, writes commercials, really gets into radio, learns about broadcasting. He flunks out of school. Ruth and Karl are not happy. Worse, they now realize that their eldest son is a (gasp!) disc jockey and not a doctor as originally envisioned. Terry blames them for giving him that Philco back in the late '40s when he was in his formative years.

Karl Hackney is now retired in central Florida, but remembers the Philco. He thinks that hew bought it in the mid-'30s for $39 from Stewart Brothers and Alwert Co. furniture store in the old Newark Arcade shopping plaza. He recalls that he and Ruth were newlyweds, and that he was earning 34¢ an hour, or $12 a week, working at the Newark Furniture Factory. The Philco was bought on credit along with other furniture. Karl recalls bringing an older neighbor to co-sign with him.

And what happened to Terry? Did he stay in radio, is he a collector today, did he ever graduate from college? You bet. In 1963 Terry went to a big station in Columbus, Ohio, WCOL-AM & -FM, while gradually finishing his degrees at Ohio State. He eventually moved to California and worked in television and film. Today he is a college professor, teaching radio and TV and advising a student-run FM station. He has never left radio. It is still his first love, and he owes it all to that first Philco. By the way, in 1963 and at the request of the management of WCOL, Terry Hackney changed his name to Mike Adams, a name and identity that he has had longer than any other.

AN OLD-TIME RECORDING VOLTMETER

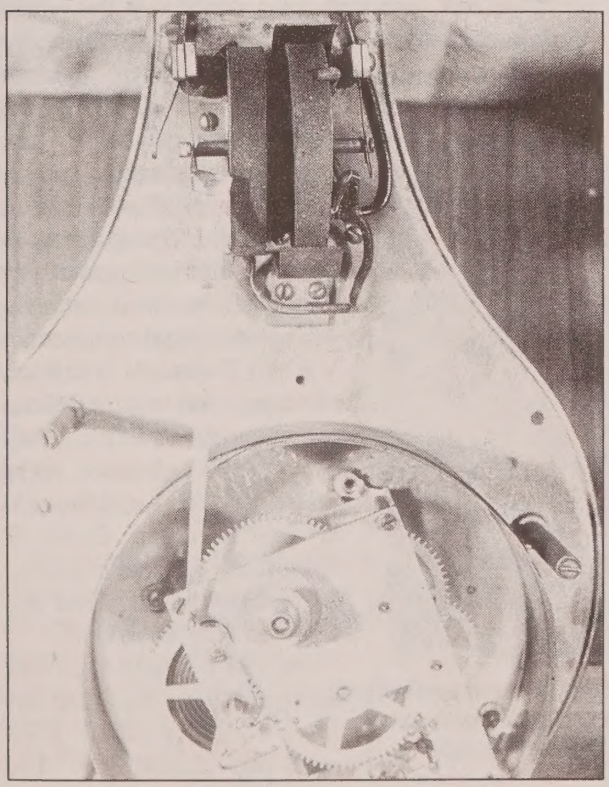
Alton A. DuBois, Jr.
67 Peggy Ann Road, Queensbury, NY 12804

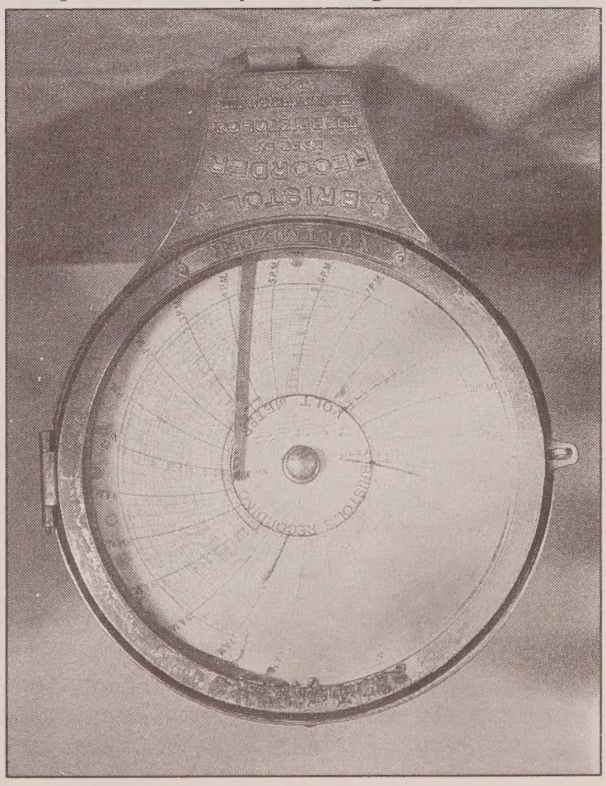
This may not be communications equipment, but it's certainly electrical. Being interested in antique clocks, I found this recording voltmeter in a garage sale and acquired it because it contains a 24-hour Seth Thomas movement to turn a calibrated dial paper.

The most interesting part is the voltmeter mechanism. It consists of a fixed coil in series with a similar coil mounted on a set of flexible gimbals. When AC or DC power was applied, the more voltage, the closer the coils could become. Attached to the moving coil is an arm with a pen on the end. The chart is calibrated in an arc.

This device was made by the Bristol Register Company, Waterbury, CT, in the late 1800s and early 1900s. They also made ampere, air-pressure, oil-pressure, and water-level meters by using the calibrated dial and the appropriate pen-drive mechanism. It is not very accurate, but shows variations in the quantity being measured.

The case is solid cast bronze and has a steel backplate. It's a very interesting collectible.





HMCS HAIDA AND HER VINTAGE RADIOS

Jerry Proc, VE3FAB
68 Braywin Drive, Etobicoke, Ontario M9P 2P3, Canada

Her Majesty's Canadian Ship Haida is one of a kind. She was one of the 27 "Tribal Class" destroyers built by the British to Royal Canadian Navy specifications between 1937 and 1945. Scheduled to be scrapped in 1963, Haida was purchased by a group of ex-Navy businessmen who would not allow her to be subjected to the indignity of a cutting torch. This was the last Tribal left and no one was going to turn her into razor blades!

Incredibly, the ship was purchased from the Crown Assets Disposal Corporation for the rock-bottom price of $20,000. Haida was paid off in Halifax and decommissioned. The Royal Canadian Navy towed her into Sorel, Quebec where she was turned over to a civilian volunteer crew of 18 reserve sailors. Basically, their job was to assist in getting the ship through the locks of the St. Lawrence River and into Lake Ontario. After arriving in Toronto on August 25 1965, she was tied up at the foot of York Street for several years. Haida was purchased by the Government of Ontario in 1971 as a historical artifact and moved to Ontario Place, a waterfront theme park.

Haida achieved battle honours during World War II and the Korean conflict; however, space limitations do not permit me to elaborate on those achievements. Our story begins at the time of her retirement from the Royal Canadian Navy.

RADIO 1

When Haida was de-commissioned, her radio equipment was gutted. Over the years, it has been a difficult struggle to locate and return original gear to the ship. There were four radio rooms fitted on Haida at the end of her service life. Radio 1 was the main radio office, sometimes referred to as the "wireless office." Here were four operating positions where CW messages were received and sent in the high-frequency bands. Traffic was received on Marconi CSR5A general-coverage receivers and typed out on Royal Telegraphic typewriters at speeds of 25 WPM. These rugged receivers were 13-tube single-conversion units which could pull in any signal from 80 kHz to 30 MHz except the broadcast band. Weighing in at 69 pounds, they weren't exactly portable but they were certainly well built.

Receiving antennas consisted of two 35-foot whip antennas mounted on either side of the bridge and two flat-tops strung between the masts. An Aerial Exchange Board (a matrix panel) connected any receiver to any receiving antenna. The system included an Antenna Multicoupler, a device which took the input from any single antenna, amplified it, and split it up for distribution to several receivers.

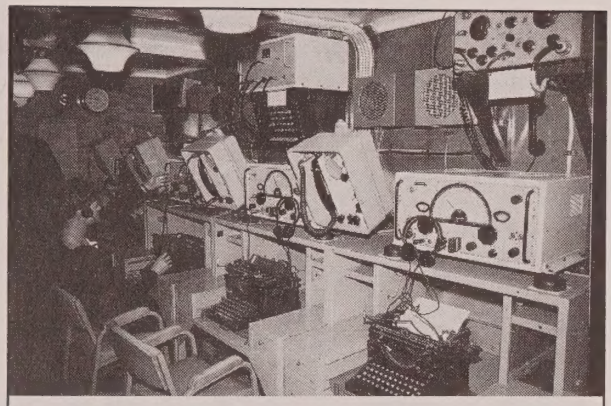
For administrative communication among naval ships, the Navy used a Marconi FR12. It had CW, MCW and phone capability in the 325-580 and 1700-4200 kHz bands. At 15 watts' power input on CW, and even less on phone, its range was somewhat limited. Some people considered it light in weight, and I suppose it was by 1944 standards, but think of how much capability one would have with 69 pounds of today's equipment!

Located in the same room is the Marconi CM11 transmitter. It was rated for 100 watts for CW or 30 watts on AM, and without a doubt was the workhorse in the radio office. The internal antenna tuner could match any antenna that gave 5 to 750 ohms resistive between 515 kHz and 13.8 MHz. This is quite a feat for any antenna tuner! Unfortunately, at 478 pounds, it had to stay in one place. If you had to, you could forge horseshoes on the cabinet, something that can't be done with today's commercial equipment.

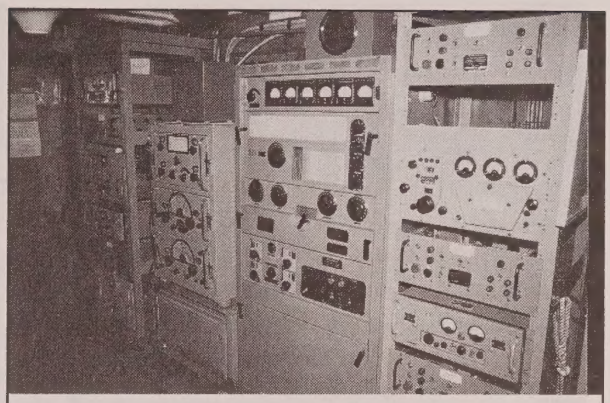
HMCS Haida, moored at her permanent home. Built at Newcastle-on-Tyne, she was commisioned in August 1943 and could steam at 36.5 knots. 377'long, 37' wide, displacing 3000 tons loaded.

When Haida was in service, she supported seven UHF radio channels and one VHF. Three UHF channels were fitted in Radio 1 and the other four were in Radio 3. Each UHF channel consisted of a transmitter, receiver and Channel Amplifier Unit.

The AN/URR-35A, an AM receiver for the 200-400 MHz band, provided UHF receiving capability. The



Starboard view of the four operating positions in Radio 1, showing the Marconi CSR5A receivers and Remote Control Units. At middle top is the antenna multicoupler and aerial exchange board.



Port side of Radio 1. The VHF and UHF gear is in the racks. Second from left is the Marconi CM11. The transmitter with meters at the top is the PV500. (It was not fitted in this room; here for display only.)

companion transmitter, designated as URT-502, was crystal-controlled, with power output adjustable between 10 and 100 watts. Most of the UHF traffic was AM voice; however, MCW would be used from time to time. VHF communication with aircraft (110-160 MHz) was provided by the combination of an RBQ receiver and TDQ transmitter, both of which were American Navy designs from the Second World War. All UHF and VHF antennas were weatherproof, vertically polarized dipoles, mounted on yardarms attached to the foremast.

Strategically located in the operations room, the bridge, and the radio rooms were Remote Control Units (RCUs). All voice and CW communications flowed through these boxes, as they were the interface between the men and the radios. Each RCU had a push-to-talk handset and CW key input, and was wired into a Channel Switching Unit (CSU) which was essentially a matrix switch. On one side of the CSU, there were connections for up to 10 RCUs. On the other side, up to five radio systems could be connected. A slide switch controlled the interconnection between the RCU and radio. Positioned between the CSU and the radio equipment was a Channel Amplifier Unit (CAU). Its purpose was to amplify audio coming from the RCU to the transmitter, to key the transmitter when CW was used, and to amplify the audio from the receiver to the RCU. Jointly the RCU, CSU and CAU were known as the Shipborne Radio Remote Control System. On verbal request, any RCU or group of RCUs could be switched to any radio channel that was available.

MESSAGE CENTRE

Forward and adjoining to Radio 1 is the ship's Message Centre. This area was the focal point for the processing, distribution and filing of all messages sent to or from the ship by radio, flashing light, flags or (in harbour) messenger. It also housed part of the ship's Teletype system. In the Royal Canadian Navy, radioteletype was known as RATT. It was installed in the fleet during the 1950s in order to provide greater message capacity.

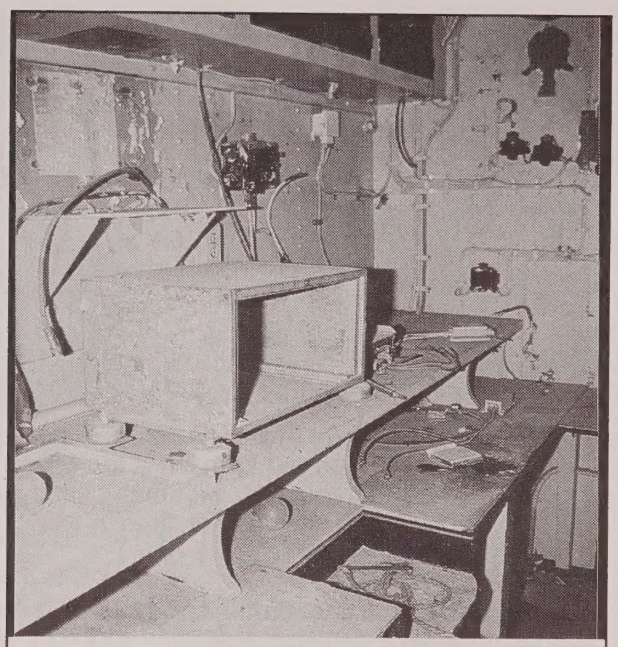
RATT transmissions were received on a Marconi CSR5A in the HF band, and on an RCA Victor RAK-5 in the low-frequency band. The RAK-5 is a regenerative unit similar to the TE236, designed in the 1930s [*OTB*, Vol. 30 No. 3, Nov. 1989]. Its performance is exceptional considering its vintage.

Audio output from each of these receivers was switch-selectable as input to a Model 107 frequency-shift converter (FSC). This unit converted the RATT audio tones from the receiver and keyed the RATT equipment. Installed were two Teletype Model 15KSR teleprinters, a Model 14 transmitter-distributor and a Model 14 reperforator. Using patch cords, the operators would interconnect the devices on a Teletype Distribution Board to satisfy operating requirements. All outbound RATT messages were passed on to the Frequency Shift Keyer and the Marconi PV500 transmitter located in Radio 2. Another piece of equipment that was fitted was the AN/SGC-1 Teletype Test Set. Since we have no information on the purpose of this unit, any information from readers is welcome.

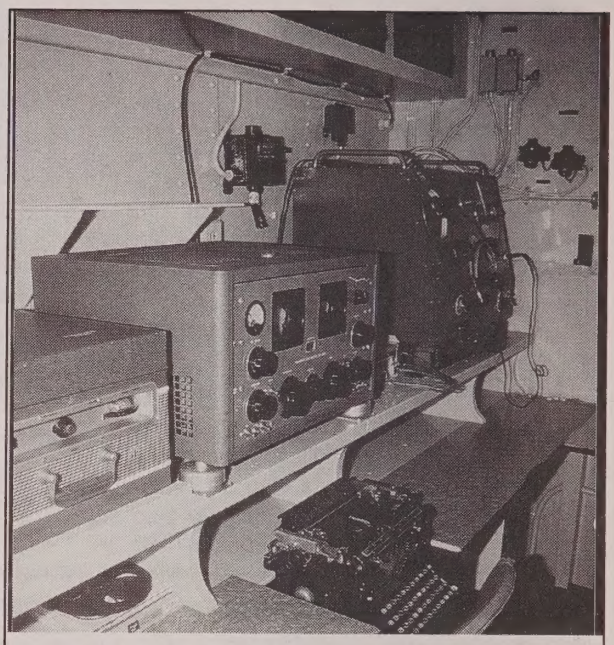
All RATT fleet-broadcast traffic was sent in five-character code groups for security purposes. To decode the messages automatically, the Navy used a KW-37 Crypto Unit whose decoding "key" was changed daily.

CODING OFFICE

Aft of and adjoining Radio 1 was the ship's coding office. A KL-7 unit was used for manual transmission and reception of coded messages. This was a cipher machine, similar to, but more advanced than, the famous German Enigma machine. It had five rotors with a wiring maze in each rotor. Earlier models of the KL-7 used a patch-cord programming matrix on the rear of the unit to set the encrypting "key" of the day. Basically, to encrypt a plain-text message, the operator would type the message on the keyboard and the KL-7 generated a gummed



"Before": Radio 4 in May 1993, soon to be restored to its former appearance after 30 years' hibernation.



"After": Radio 4 in August, after equipment was fitted in place. In the center is the SP-600; at left, the tape recorder.

tape using five-letter groups. The tape was pasted on a message pad and the resultant encoded message was submitted to the Message Centre where such information as routing indicators and date-time-group was added. Finally, the complete message was passed to a CW or Teletype operator for transmission. To decrypt, the procedure would be reversed. Once the message was decoded, it was given to the Message Centre, where it was typed up and duplicated for distribution within the ship and for filing.

RADIO 2

This was the main transmitting room for RATT and CW transmissions. If the main radio office were put out of action, emergency communication could be provided from this location but at a great reduction in capacity. Radio 2 also provided additional radio-channel capacity in the event that Radio 1 became overloaded with traffic.

There were two CM11s and one Marconi PV500 HM2 transmitter installed in this room. The PV500 was a 500-watt CW unit whose frequency range spanned 3-28 MHz and which was used primarily for RATT transmissions. A Frequency Shift Keyer (FSK) converted the 60-mA RATT signals from Radio 1 into signals which would drive the transmitter. All equipment in this room was controlled from Radio 1 but there still had to be two "Sparkers" on duty in order to change frequencies and tune the equipment. The PV500 was connected to a 35-foot whip antenna mounted on the starboard side near the mainmast. One CM11 used a 35-foot whip antenna mounted on the opposite side, while the other tickled the ether with a flattop antenna.

PV500s were notorious for ground-loop problems and one made sure to keep one hand in a pocket while tuning them. Placing a hand on the cabinet to brace yourself against the ship's roll could result in a really fine attention-grabber in the form of an AC buzz. Many Sparkers tuned the PV500s by watching the power amplifier through the glass window. When the plate was cherry red but not white, the final stage was considered to be tuned. On some PV500s, the bottom power-supply cover panel can be found dented. This was normal, caused by having to kick it in order to ensure that the power-supply interlock engaged!

An example of restoration: the unit at right is a refinished Marconi CSR5A power supply. The left unit is a near-replica built 50 years later!

RADIO 3

Radio 3 was an unmanned equipment room located on the port-side flag deck. Housed here were the transmitters and receivers which provided four of Haida's UHF radio channels. All equipment located here was remote-controlled.

RADIO 4

This room was located on the starboard side over the galley. In the later years of Haida's service life, Radio 4 was fitted as an electronic-warfare room. It was equipped with such HF and centimetric direc-

tion-finding receivers as the Marconi FM12 and the AN/UPD-501 respectively. In addition, CW transmissions in the 4- and 8-MHz bands from Russian electronic-intelligence gathering ships would be monitored using a Hammarlund Super-Pro 600 receiver and recorded on a Webcor reel-to-reel tape recorder. Once Haida was back in port, the recorded tapes would be sent to Ottawa for analysis by Naval Intelligence.

Slowly, the original equipment is making its way back to the ship as more and more people become aware of what we are doing. In my position as a Radio Restoration Volunteer for HMCS Haida, I find an extremely challenging and rewarding experience in making her vintage gear operational. Power supplies had to be hand-crafted for most of the receivers and many hours have been devoted to researching the schematics of the various devices and systems. The work is progressing; however, the most difficult part is locating the missing equipment. I would be interested in finding out if anyone knows the whereabouts of any of the following gear:

- Model 107 frequency-shift converter (made by Northern Radio).
- Matching frequency-shift keyer for the 107 converter.
- AN/SGC-1A teletype test set, RCN #5820-040-0046.
- AN/SRC-501 HF transceiver, RCN #5820-21-041-1625.
- AN/UPD-501 centimetric DF receiver.
- Webcor reel-to-reel tape recorder.

Today, HMCS Haida is permanently moored at the beautiful Ontario Place waterfront park in her most natural setting - afloat on the water. She is only one of two warship museums in Canada, and we are very proud to have her berthed in Toronto. Her legacy has provided inspiration for great numbers of young men who choose to serve their country in wartime and peace. During the winter months Haida is closed, but from mid-May to Labour Day, she is open to tourists seven days a week between 10:30 AM and 7:30 PM. As a special treat, Haida fires a saluting charge from her four-inch guns each day at noon. On behalf of Commander R. A. Willson and the crew of HMCS Haida, I cordially you to tour this great ship if you have the opportunity to visit Toronto.

A REMARKABLE QSO

Joe Döring, DL1RK

Reprinted from the Northern California DX Club *DXer*, Feb. 1992

During WW II, I served as Lance Corporal in a special Army signal corps unit in the Afrika Korps. We intercepted enemy tactical radio communications in the African war theather - we were Erwin Rommel's ears.

Late afternoon on May 7, 1943 - five days before we surrendered Tunisia - our company commander asked if I would like to communicate with the enemy. "Sure I would," was my answer.

My first thought was that it was the surrender message, ending the fighting in Africa. But the message was about a target not to be bombed.

Since Allied bombers flew in from the west, the message had to be addressed to the British First Army, which operated in that area. Therefore I chose the First Army headquarters radio net, noted the frequency and callsigns, took the message and went to the transmitter van about one-half mile from our receiving site.

The British net was very busy that night so I had to wait a long time. While waiting, I practiced with the straight key, which I hadn't used for a year or so; my job sitting in front of a receiver copying enemy radio traffic didn't require sending.

Finally the net worked its last traffic and it was my turn. With the 80-watt Lorenz transmitter carefully set to zero-beat and using a "borrowed" callsign, I hit the key: "QTC 1 QRK? K."

QRK 5 was the answer.

"DAH DI DAH DI DAH, TO HQ ALLIED EXPEDITIONARY FORCES IN AFRICA FROM HQ AXIS FORCES IN AFRICA."

The the guy whose call I had borrowed came in: "THAT'S NOT ME, ITS A PROPAGANDA MESSAGE FROM THE ENEMY."

But I broke in with: "ITS NOT PROPAGANDA, BUT LIFE OR DEATH FOR YOUR OWN PEOPLE." In the end, the HQ station told me to go ahead with my message.

I sent: "TWO SHIPS ARE IN THE HARBOR AT TUNIS. ONE IS A FREIGHTER WITH 600 ALLIED PRISONERS AND THE OTHER IS A HOSPITAL SHIP. DO NOT BOMB THOSE SHIPS AND SAVE THE LIVES OF YOUR OWN PEOPLE."

I received "QSL" for my message and said I would QRX tomorrow - same time, same frequency - for a possible reply, but no reply was received in the next five days.

The event faded in my memory during the years to follow, until 1950, when I bought a book about the war in Africa. In it I found the message I had sent and the reaction to it. General Alexander, the British First Army Commander, met captured German General von Arnim and thanked him for the message that saved 600 of his soldiers. In return, he agreed to send 600 wounded German soldiers to Italy, on a hospital ship.

In a small way I had helped add a human touch in this cruel war. I call this my only really worthwhile QSO - ever!

THE G & R VALVE COMPANY

Colin MacKinnon, VK2DYM
52 Mills Road, Glenhaven, 2156, Australia

In Australia the large wireless company, Amalgamated Wireless Australasia, or AWA, made valves from around 1920, and established the Amalgamated Wireless Valve Company (AWV) in 1932. Then, in 1936, Philips set up a valve manufacturing plant, followed by Standard Telephones & Cables (STC) in 1939. STC valves were mainly for telephone-repeater amplifiers but the company produced transmitting valves during WW II.

However, not many people know that in 1923 there was another serious attempt to produce wireless valves for the Australian market.

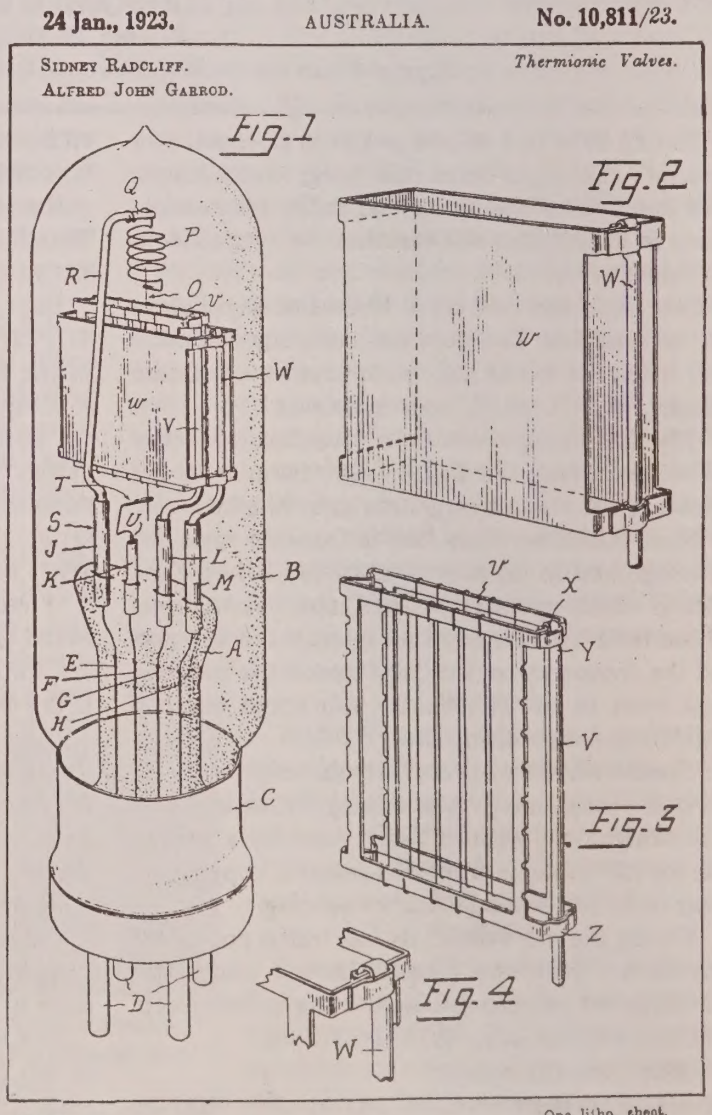
During World War I, Mr. Alfred John Garrod studied at Cambridge University, England, and worked in the Cavendish Laboratory with Professor J. J. Thompson, the famous electronics scientist. The Laboratory designed and made amplifier and detector valves, mostly for the Royal Navy, and Garrod learned the techniques of valve design and construction.

After the war Garrod emigrated to Australia and shortly after met up with Mr. Sidney Radcliff, who was an industrial chemist but was involved in the production of high-vacuum pumps for evacuating X-ray tubes. At this time most valves had a residual gas content within the envelope, causing them to be called "soft," which detracted from performance. Garrod realized the benefits of greater evacuation of the gases from the envelope and found in Radcliff an engineer with the capability to make a suitable pump. Garrod also had ideas on the design of valves, and felt he could devise a better valve that did not conflict with patents controlled by the AWA consortium.

Garrod and Radcliff worked together for two years on the design and construction of their valve and on 24th January 1923 lodged a Provisional Patent Specification with the Patents Office. Their Complete Specification was lodged on 18th June and accepted on 2nd November. Australian Patent No. 10,811/23 was issued on 13th November 1923. The patent preamble mentions that Garrod lived at "Yundago," Hilda St., Wahroonga, near Sydney.

Garrod was convinced that the elements of a valve must be precisely aligned for consistent performance. To this end his valve, a triode, was designed to allow final alignment of the three elements prior to fitting the envelope. To understand how this was accomplished, refer to the sketch submitted with the patent (Fig. 1). In this sketch it can be seen that the lead-in wires (E, F, G, H) are brought through the valve squeeze (A), but are terminated in small-diameter tubes (J, K, L, M). The filament wire (O) is supported by a rod (R) and held taut by a spring (P).

The plate construction is shown in Fig. 2 and the grid in Fig. 3. It should be noted that each has a mounting stem protruding, (W) and (V) respectively. Now, when the valve is assembled, the stem of the grid assembly, then that of the plate assembly, is pushed into the tubes in the squeeze and can be moved vertically and rotated till they align precisely with the filament. The sketch of Fig. 1 shows the plate and grid stems with a bend, so perhaps some delicate twisting was needed for exact alignment. Once the elements were in correct location the tubes (J, K, L, M) were crimped mechanically to secure the parts in position. This is indicated by (S),



although the crimping is not immediately obvious.

Apart from the claims for more precise alignment, this mechanical fixing did not require welding and consequent heat and oxidation damage, and there was no subsequent need to re-align and handle the elements manually, with the possibility of contamination.

Garrod and Radcliff registered a manufacturing company, the "G & R Valve Company" and set about obtaining equipment to make their design. Radcliff's expertise was instrumental in building mercury-vapour vacuum pumps to obtain a very high vacuum within the envelope. The factory was established "in Wahroonga, near Sydney," and I assume it was at the residence of Garrod. In 1923 Wahroonga was a distant bush suburb of Sydney, reached by dirt road, whereas today it is an exclusive residential area where a factory would be totally out of place.

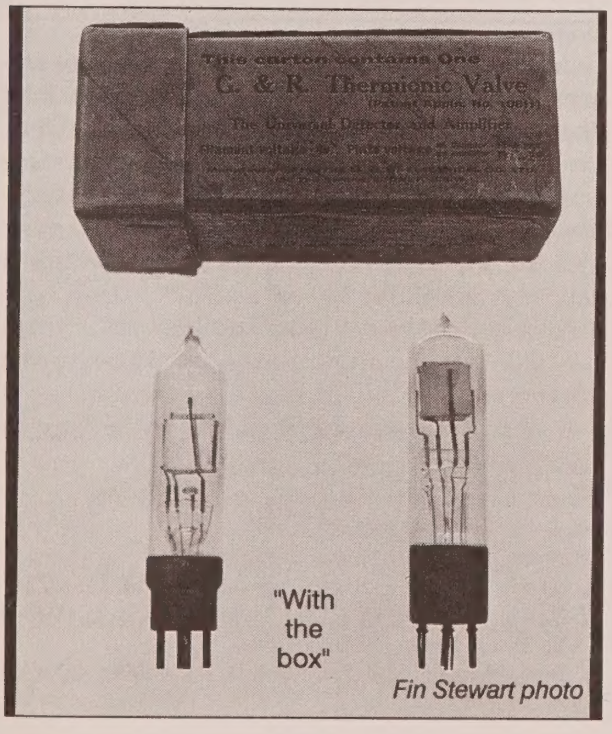
By mid-1923 the "G & R 77" valve was in production, in small quantities, with lavish claims for its performance, see the photo and ad. Their triode could also be used as a detector, of course, but claims of "Perfection Detection" and "Ample Amplification" would make even a modern-day advertising agent blush. New System Telephones, a manufacturer and importer of wireless components, was appointed the sole agent for G & R.

The valve went through a number of design changes during the period 1923-25. Initially the brass base was from a then-standard bayonet lamp base, minus the side locking pins but fitted with four base pins. This design is illustrated in the left example in the photo. Because this was non-standard for wireless valves, G & R supplied a special socket which could be mounted onto a sheet of bakelite or other material, but was also an adaptor to fit into the English sockets common at the time. The right-hand example in the photo illustrates the later valve base used. The valve was available as either "English or American Base."

Notice the substantial differences in internal construction of the samples. When first released in 1923, the valve was about 25 mm in diameter and 90 mm high. By 1925 the diameter had increased slightly, probably to match the standard valve base now used, but the internal construction and element location differ markedly between samples. I have no explanation for these variations. John Stokes, in 70 Years of Radio Tubes and Valves, describes the G & R 77 as follows:

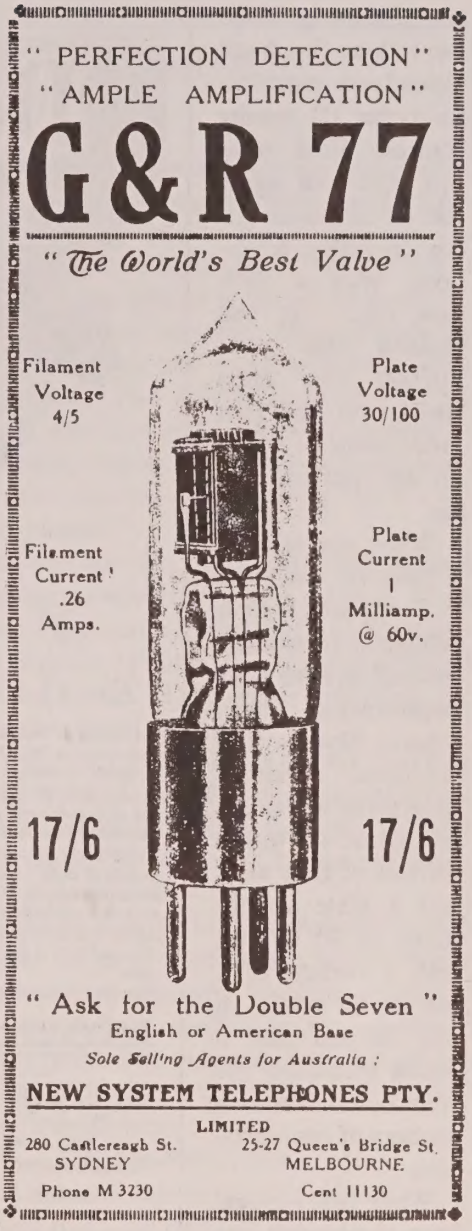
> "A contemporary illustration of the valve shows it as having an axial filament surrounded by a coarse ladder grid followed by a widely spaced box-like anode. Judged by the standards of the day, such a design was obviously inefficient and it is not surprising to find that the G & R valve was not a commercial success."

Even so, by mid-1925 the G & R 77 valve was being made in the Wahroonga factory, with a production capacity of 500 valves per week and "adequate arrangements for almost unlimited expansion." In a contemporary report in 1925 the company was now said to be the "GEC Valve Works," with Radcliff as the technical adviser but working at Sydney University. GEC was associated with the agents, New System Telephones, but I have not read elsewhere of GEC being involved in valve manufacture in Australia. The report tells how some of the



"With the box"

Fin Stewart photo



manufacturing steps were done by hand instead of machine, for *better* [!] quality control. Each valve was given an aging test of 16 hours under operating conditions, with a 95% pass rate. It was claimed that over £10,000 had been spent over the past three years to develop this "perfect" valve.

When operating as a detector, the G & R 77 required a plate voltage of 20, whilst it was said to have peak amplification efficiency at 30 volts. The published specifications listed a filament voltage of 4-5 with a current of 0.26 amp, and a plate voltage range of 30 to 100, with a current of 1 mA at 60 volts. It was claimed that it would withstand 200 volts before showing any sign of gas ionization.

When first brought onto the market, the valve was priced at 23/6, which compared with around 30/- for imported De Forest and Radiotron valves. AWA had by this time increased production of a range of four valves and there were substantial duties on imported valves. However, in 1925 there were moves to reduce the duty, which led AWA to drop its prices firstly to 25/-, then to around 17/6. G & R followed. During this period a popular weekly magazine, *Wireless Weekly*, championed the reduction of import duties, leading the magazine into conflict with the local manufacturers, AWA and G & R. There was no love lost between AWA and the rest of the country, with the company being "the worst hated firm in Australia," but in a letter to *Wireless Weekly*, G & R made a plea for the retention of duties to secure its survival.

By 1927 G & R had turned to selling complete receivers. I suspect they did so in order to sell their valves. They probably had the sets, or at least their cabinets, made by a contractor.

In the end it was probably a combination of factors which led to the demise of G & R. If John Stokes' summation of poor performance is correct, that information would have spread round the trade very quickly, whilst reductions in valve prices and increased imports would have made the market more intense, and undoubtedly AWA would have made life very difficult for any competition. There is no further news of G & R after late 1927 and it faded into obscurity. So far I have not found anyone who remembers G & R or its products. The company is not even mentioned by Tyne in Saga of the Vacuum Tube.

REFERENCES

Australasian Wireless Review, June 1923, pp. 8-9.
N. S. W. Wireless News, May 1925.
Wireless Weekly, May 1925, p. 13.
Australian Patent 10,811/23, applic. date Jan. 24, 1923.
J. Stokes, 70 Years of Radio Tubes and Valves (Vestal, NY: Vestal Press, 1982), p. 189.
Communication with Fin Stewart, Australia's valve expert.

A 1935 RECEIVER AND 210 HARTLEY TRANSMITTER

Joe Dreher, W2TKG, ex-W9WOD
1 MacArthur Rd, Baldwinsville, NY 13027

THE RECEIVER

This receiver, a 57 detector - 56 audio, was built late in 1935 and first used in November. Its initial purpose was shortwave listening. It did, however, serve as the amateur receiver at W9WOD, Terre Haute, IN, from March 25, 1936, until July 3, 1941, when it gave way to a Hallicrafters SX-25. It fulfilled both roles, considering the state of the art and financial limits of that time.

The receiver's appearance today is not much different from that in the '30s. In the late '50s, it was reconstructed on a new chassis; a new front panel was added for better appearance. Component layout is the same.

The original version used terne plate for the front panel and the chassis. Angle brackets connected to the front panel and a small Bakelite rear panel supported the chassis. Under-chassis wiring and components were exposed on either side. Various dials were used, finally settling on a pair similar to the Nationals but considerably less expensive. The original dials disappeared mysteriously during WW II.

The tubes and most of the parts are from the original set. The IRC metallized resistors, the Aerovox mica capacitor, and the paper capacitors were typical of the period.

The circuit is essentially the same as in the 1935-38 ARRL Handbooks. There are two differences. The first is a component substitution. The original design called for a "screen-grid coupler" (National 2-101). This coupler is an iron-core choke, a capacitor, and a resistor, all in a shielded container. Its cost was prohibitive at the time, so the components at their recommended values were substituted, the Thordarson choke at the rear of the chassis being one. The other change involves the insertion of a choke in the B+ lead to the 56 plate and capacitor coupling to the headphones. In the '30s it was common for headphone terminals to be exposed on the side of each receiver. Contact with the receiver's plate supply via these terminals while adjusting a headset (B+ connected directly to the headphones), was easy and frequently resulted in the listener being "bitten." The choke-capacitor arrangement was used to avoid applying the B+ directly to the phones.

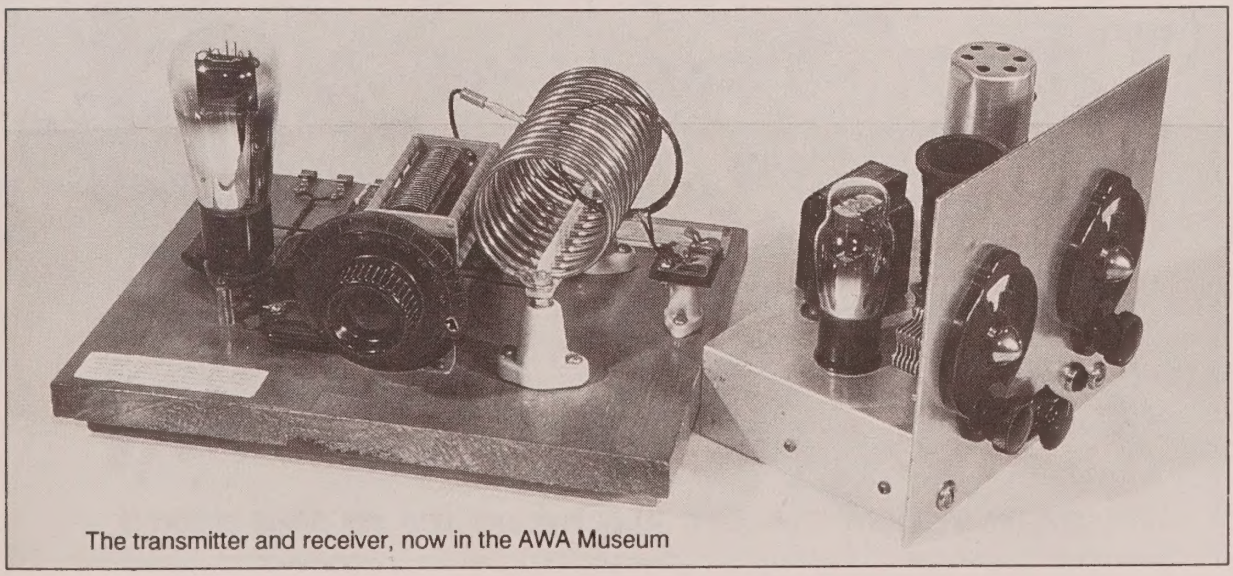
Only the coil for the 160-meter band (wound with double-cotton-covered wire) is original. Coils for the other bands are of later making. Originally, only the coils for 160 and 80 meters were wound on regular coil forms. Tube bases were used for the 40-meter band coil and above.

For the most part, components for the receiver, including the terne plate, coil forms, tuning capacitors, and the Thordarson choke, were ordered and purchased from Allied Radio in Chicago. Delivery was usually by Railway Express.

There is nothing historic in the receiver's current power supply. Original components, particularly a compact power transformer, became defective. What the supply does manifest is the amateur's ability to make-do with what is available in his junk-box. The exception is the purchase of the 2.5-volt filament transformer.

THE TRANSMITTER

Except for the tank capacitor and tank coil, all of the parts date from the early to mid-1930s. They were used in the first transmitter at W9WOD, a 210 tuned-plate tuned-grid oscillator. That oscillator used two variable capacitors, Freed-Eisemann as I recall, which, unfortunately, have not survived.



The transmitter and receiver, now in the AWA Museum

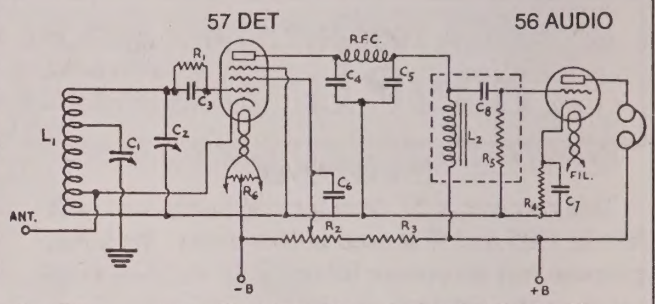
While there was a preference to rebuild the TPTG, the Hartley was selected for its simplicity.

The tank capacitor is government surplus. Its AK-style dial is of the right vintage. The 8-ga copper wire for the tank coil was selected for economy and ease of handling.

The 210 was received "used" from W9NTP, the result of a wager that W9WOD would not be licensed by June 1, 1936. W9WOD was issued March 17th. The tube has had limited use and still tests very good. According to Bro. Patrick Dowd's RCA date list, the "J" of the J13 date code on its base means that it was made in 1934 and the "13" means it was "in the 2nd two-million batch of tubes" produced by RCA that year.

The power supply delivers 480 volts DC to the 210 at its rated plate current of 50 mA. The transformer and filter choke date from 1936, bought from Allied Radio for the 210 TPTG. Besides high voltage, the transformer offers 7.5 volts for filaments. A small resistor has been inserted in each of the filament leads (beneath the breadboard) in order to keep the 210 on the safe side of 7.5 V. The filter capacitor of the original supply - as big as a boxcar - has not survived; a military surplus type has been substituted.

The 210 Hartley oscillator has been operated very successfully at W2TKG on 80 meters. Several contacts were made, mostly with members of the AWA on its 80-meter CW net. One contact was made on 30 meters but serious chirp would not allow continued operation on that band.



C1, C2	100-pF midget (Hammarlund MC-100-S)
C3, C4, C5	100-pF fixed mica (Aerovox 1460)
C6, C6	0.5 μF or larger
R1	5 MΩ
R2	50K potentiometer (Frost), small size
R3	25K, 10 W (Ohmite)
R4	2K, 1 W
R6	75 Ω, center-tapped (Ohmite)
RFC	Universal-wound SW choke (Hammarlund)
L2, C8, R5	Screen-grid coupler (National S-101), or L2, 500 Hy, C8, 0.01 μF; R5, 0.5 MΩ

COIL DATA

Band MHz	Total Turns, L1	Cathode Tap	Band-Spread Tap
1.45-3.4 (1.75)	54-½	3-¼	29-3/4
3.05-7.1 (3.5)	27-½	1-¼	11-3/4
6.1-14.2 (7)	13-½	3/4	4-¼
10.6-24.0 (14)	7-½	½	1-¼
18.0-41.0 (28)	3-½	1/3	½

All coils are wound with No. 24 DSC wire on 1-½-inch forms, the length of the coil being 1-½ inches in all cases. The taps are counted from the lower or ground terminal. Assuming that the tuning dials have 100 divisions and that the "0" end of the scale represents maximum capacitance, the setting of C2 to give amateur-band coverage will be approximately as follows: 1.75 MHz, 44; 3.5 MHz, 38; 7 MHz, 28; 14 MHz, 54; 28 MHz, 78.

Adapted from 1935 ARRL Handbook

EVERY YEAR AT THE AWA FLEA MARKET IT'S THE SAME STORY!!

A 1929 REGEN

Bob Dennison, W2HBE
82 Virginia Ave., Westmont, NJ 08108

In my first two Old-Time CW Contests (1984, 1985), I used a '30-'30 regenerative receiver. The next year I built a real 1929 receiver using a pair of 201A tubes. However, late in the evening 80 meters starts to fade out and it becomes difficult to copy the weaker stations. So, in 1988 I added an outboard amplifier using a 112A. This was so successful that I built a new receiver, putting everything on one breadboard. I connected the bandspread condenser to a tap on the coil that gives a tuning rate of one kHz per division. Thus, when the dial is set to 85, I know that I'm tuned to 3585 kHz, etc. This doesn't hold for the entire span of the dial, of course, but it works quite well over the 20 kHz in which the contest takes place.

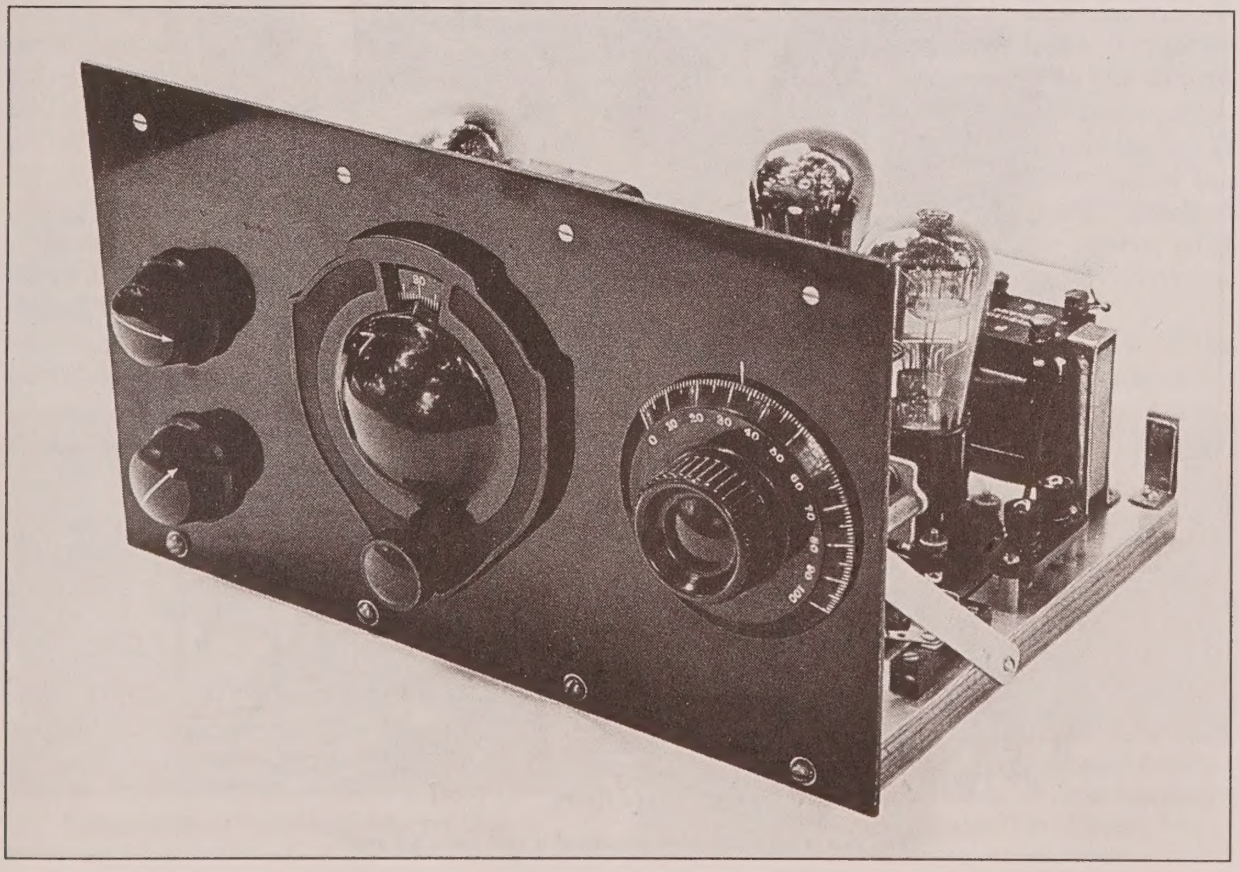
The bandset tuning condenser is a Karas measuring 180 pF. Its Q was measured as 2240 at 3.6 MHz. For comparison, a "modern" Hammarlund MC-100 showed a Q of 2775. The antique Hammarlund used for bandspread (C3) had a Q of only 763. This is quite poor but, since it is tapped far down on the coil, its effective Q is much higher - estimated to be about 5000. To make the adjustment of the bandset condenser (C4) less critical, I put a 100-pF mica condenser C2 inside the coil form. The antenna coupling condenser (C1) is made of two small brass angles mounted on a bakelite block, with spacing (about 0.06") adjusted to give about 1 pF.

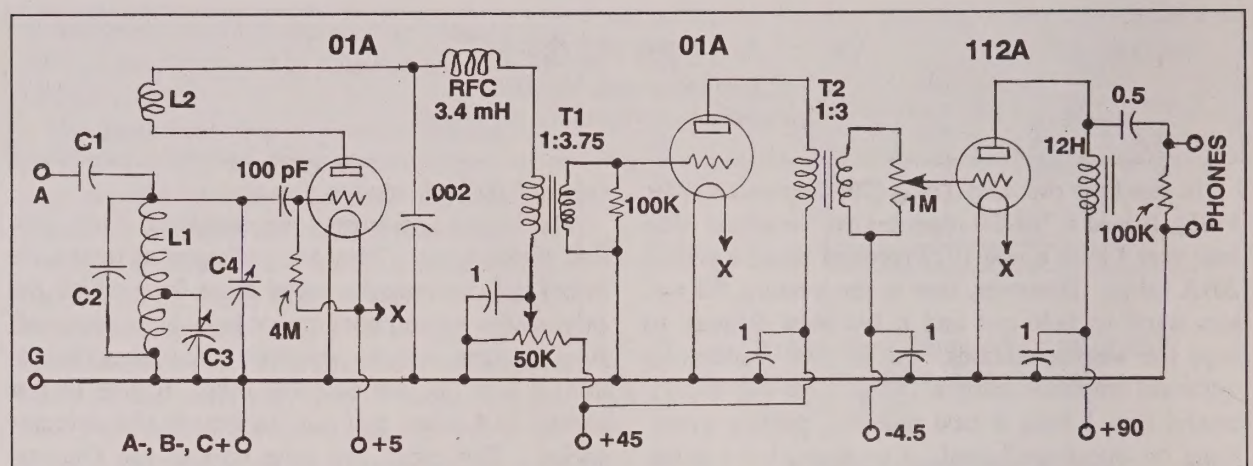
The bypass condensers are miniature 1-μF, 100-volt pigtail types. They are packaged as dual units in old-style rectangular metal cases from which the original flat-wound condensers have been removed. A spring-type, anti-microphonic tube socket (Benjamin) is used for the detector tube. It pays to test several 01A tubes and put the best in the detector socket. The other two tube sockets are General Radio white-porcelain surface-mount sockets.

Impedance coupling is used at the output to keep DC out of the phones. The choke and associated components were mounted inside the case of an old Silver-Marshall model 255 AFT.

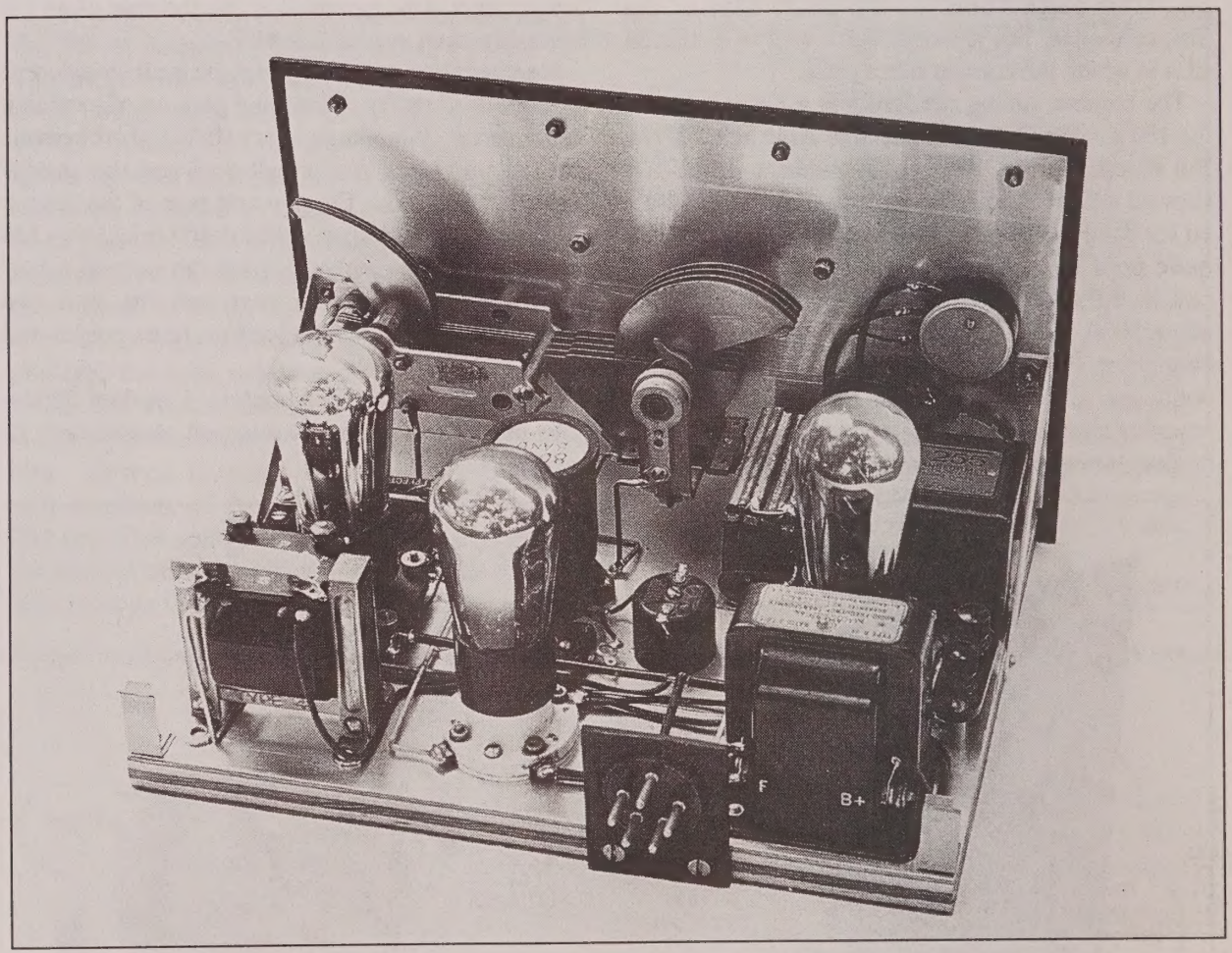
Regenerative receivers must be well shielded to avoid hand-capacity effects and pick-up of local line interference. Aluminum sheet (0.012" thick) covers the top surface of the breadboard and the rear of the bakelite panel. The top and rear of the set are shielded by an L-shaped shield (0.05" thick) that has a ¼-inch lip that catches against the outside top of the panel. The bottom rear end fits into two grounding receptacles made from brass angles and pieces of spring brass.

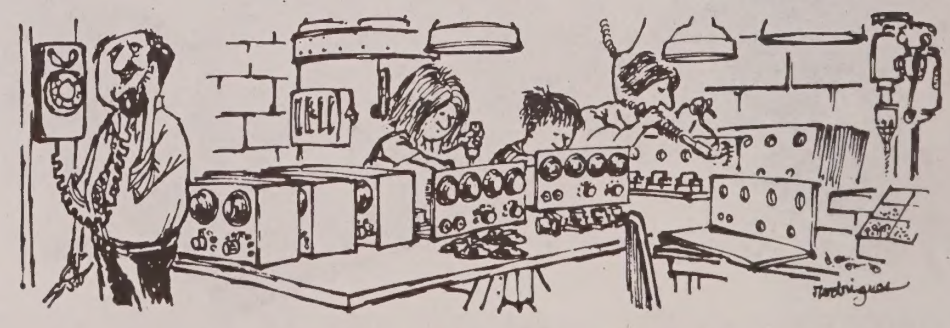
In the 1993 Old Time contest, I worked 32 stations using this receiver. I was well pleased with its performance.





The 3-tube regen at W2HBE. L1: 22.2 turns No. 22E, winding length 1½", wound on 1½" dia. Silver-Marshall 5-prong form. L2: 6.2 turns No. 34 SSE wound in groove at base of form. Bandspread tap at 8.75 turns from bottom of L1.





"Yes, this is the party that advertised a 1922 radio for sale."

Museum News

THE DUTCH MUSEUM OF BROADCASTING

Nolan Stephany
3369 Lake Rd., Williamson, NY 14589

Hilversum was the first Dutch city I ever heard of, thanks to Radio Netherlands. That's something shared by many, I'm sure, who discovered the world through shortwave radio. Hilversum is also home to the Dutch domestic networks and, understandably, the national museum of broadcasting: the Nederlands Omroepmuseum.

The museum has recently relocated to a street named Oude Amersfoortseweg in a pleasant, mostly residential area, and now houses both the broadcasting museum and its counterpart, the Fonografisch Museum.

Thorough exhibits trace practice and policy from the pioneers to the latest developments, so there's a full variety to explore. Visitors can circulate at their own pace (unlike the museum at Radio France), and guided tours are available in Dutch. Everything in the museum is in Dutch, but there's plenty to hold the interest of any non-Dutch speaker with an interest in broadcasting or sound recording. The staff members I encountered were all friendly and spoke good English. Most are volunteers - the museum employs six, with 125 volunteers.

You'll be greeted in the lobby by a row of TV monitors showing the present-day outputs of Holland's eight networks. (These networks divide up time on three over-the-air channels in an elaborate time-sharing plan.) The Fonografisch Museum is to the left and the Omrepmuseum to your right. One entry is valid for both museums - as a devout broadcasting enthusiast, I started with the latter.

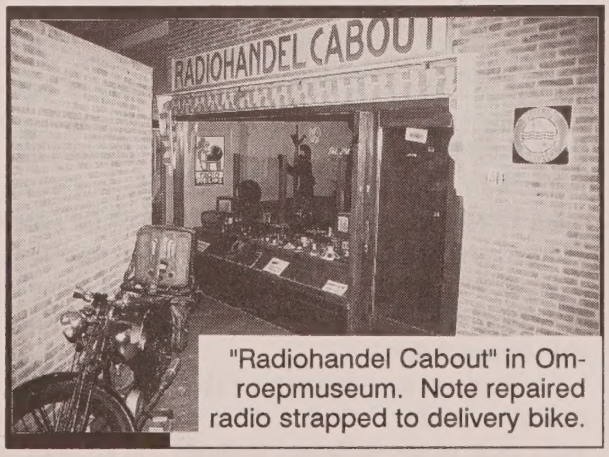
The radio section starts with the original transmitter from Steringa Idzerda's station PCGG in The Hague, the country's first radio station, and Holland's first regenerative receivers manufactured by Idzerda and his competitor the N. S. F. Wall cards and memorabilia tell the story of the pioneer Dutch radio networks, laid out around a complete control room used by the K. R. O. network from 1950 to 1977 and still operated by the museum on occasion. Don't ignore the speaker on the opposite wall. Until inexpensive receivers were available after World War II, this was "radio" in most Dutch homes: a speaker with a wall switch. Signals were delivered by cable, and listeners could switch among two Dutch channels and possibly a British or German station, depending on location. For a little hands-on fun, one may re-create the sound of blowing wind or a slamming door on mechanical sound-effects machines.

Radio Oranje is featured in the history of WW II radio, and there's a sizeable display on Radio Veronica and other shipboard pop-music stations immensely popular in the '60s and '70s. (Veronica has since been established on land and is now Holland's largest network.) The radio exhibit ends with the development of stereo broadcasting, Radio Netherlands, the introduction of cable commercial stations in the late '80s, and over-the-air, private, commercial broadcasting stations introduced in 1992.

A viewing gallery with 35 television monitors lets one enjoy famous moments in Dutch TV at the touch of a button: segments of up to five minutes show samples of news, sports, entertainment, children's shows, space, and the Dutch royal family. (I particularly enjoyed footage of Queen Juliana and Prince Bernhard's 1971 visit to Indonesia. Bernhard was quite adept with a 16-mm film camera, but I couldn't tell whether he was shooting the scenery or filming the crowd filming him.)

Radio receivers stand on the floor and fill the shelves of the Cabout Radio Shop. ("Radiohandel

"Record store" in Fonografischmuseum



"Radiohandel Cabout" in Omroepmuseum. Note repaired radio strapped to delivery bike.

Cabout" in Dutch - it's named for director-emeritus Kees Cabout, but staff members are quick to point out it never really existed.) Most receivers are Philips, naturally - a goldmine for those who like to study dials calibrated in wavelengths and stamped with broadcasters' dial positions, but the store is desperately short of spare parts . . .

Control room used by K. R. O. Radio, 1950-77

Television enthusiasts can look into a beautifully preserved 1950s remote-production van and admire themselves on a working Philips plumbicon camera from the set of "Zeg 'ns Aaas" ("Say Ahh"), a once-popular sit-com about a doctor. There's a simple, working rotary-disc projection television, followed by displays documenting the international development of electronic television, including Philips' first receivers, film-editing and projection equipment, a Philips supericonoscope camera, and some studio props.

More wall cards and collections of souvenirs document the arrival of the television networks. Some came from a short-lived station called "TV Nordzee." For three months in 1964 the station operated from an artificial island in the North Sea (similar to an oil rig) known as the REM Island. The Dutch post office closed it down by force, and according to current director Jon Vos, the items now on display should have been destroyed following the raid, but some of the raiders took them home instead.

At the rear is a van with a unique fiberglass frame, once used for remote production by Radio Netherlands - its Telefunken recorders and mixing equipment also fully and beautifully restored.

The Fonografisch Museum goes far beyond phonographs to document the technology of sound recording, starting with a large collection of cylinder phonographs from Edison, Columbia, and Pathé. (The latter's 1904 model "Le Gaulois" caught my eye with its glass horn.) You'll see the arrival of disks, LPs, 45s and inexpensive turntables. A 1900s record store has been recreated, surrounded by collections of cylinders, needle boxes of all kinds, and novelty picture disks.

Displays of professional equipment include record presses, transcription tables, and 40 years of tape-recording equipment. (The Omroepmuseum has a Philips-Miller recorder, which used a celluloid reel for audio recording before acetate tape was developed.) A collection of cassette recorders shows Philips' prominence in consumer sound recording, from its first model to its latest: the digital compact cassette (DCC), as well as Sony's "Minidisc" recordable compact disc.

A videotape runs throughout the day showing the operation of the N. O. B. - the company which provides most of the technical facilities and services to the various networks. For those planning detailed research or exploration of Dutch television, a service should now be in place to allow archival material to be sent for viewing by request.

The Omroepmuseum also hosts a series of short-term exhibits - in 1993, a collection of toys inspired by TV shows and movies (Pipo the Clown may be known only to the Dutch-speaking world, but he's alongside "Sesamstraat," Batman, Lassie, Spiderman, Bonanza, and Godzilla). Early this year, the exhibit changed to famous silences in Dutch broadcasting: 1933, when Dutch radio shut down for 24 hours after Marinus van der Lubbe set fire to the German Reichstag; Radio Veronica's silence after legislation ended its offshore broadcasts in 1974; and lapses in radio and television due to strikes. From May, an exhibit will honor the shipboard pop-music stations of the 1960s and 1970s. In autumn, another exhibit will celebrate the 75th anniversary of Idzerda's first broadcasts from PCGG, culminating with a reenactment including a full orchestra.

You don't have to leave empty-handed either - there's a small gift store off the lobby offering books, tapes and all sorts of souvenirs printed with network logos and personality photos.

Hilversum is located between Amsterdam, Utrecht, and Amersfoort; easy to get to by car or train. (Holland has an excellent public transportation system.) Oude Amersfoorteweg can be found on a Hilversum street map, but the building is set back from the street and not prominently marked. (I found it only by accident on a Sunday afternoon while exploring on foot.) It may be marked on a map by its previous occupant "NOB."

By train from Utrecht, the museum is a short walk from Hilversum Sportpark station. If you've arrived by train on the Amersfoort-Amsterdam line, stop at Hilversum Central. There's plenty of parking, too, so arriving by car is unusually practical. Admission in October was 7 guilders (about $4); less for seniors and children. Hours are 10 AM - 5 PM, Tuesday-Friday; noon to 5 PM Saturday-Sunday; closed Monday. Omroepmuseum, Oude Amersfoortseweg 121-131, 1212 AA Hilversum, Holland; tel. 035 - 885888.

REFERENCE MATERIALS

REVIEWS AND COMMENTS

BAKELITE (An Illustrated Guide To Collectible Bakelite Objects)
Dick Mackiewicz
As you can tell from the title, this book covers much more than just radios. It also covers a good deal more than bakelite, with the history of virtually every kind of plastic ever used in radio including urea and catalin. Along with the history you'll get some basics in chemical composition and excellent descriptions of manufacturing processes. This is a large book, almost 10"x13". The photographs are all in color, and the print quite easy to read. While objects in the book are predominately British, the U.S. is well represented, along with France and other countries. This book deserves an "A" for accuracy, content and presentation. Best of all, your spouse (of either gender) will enjoy it just as much as your. Place this on your coffee table, and your friends will enjoy also!

Written by: Patrick Cook and Catherine Slessor, Chartwell Books, Inc. 110 Enterprise Ave. Secaucus, N.J. 07094
BAKELITE - 128 pgs. Hardbound - available from Edward R. Hamilton Bookseller, Falls Village, CT. 06031-5000 #680710 $11.95 +$3.00 shipping (CT. residents add sales tax)

A Book for the Collector & Historian:
Philco Radio by Ron Ramirez with Michael Prosise

My interest in this book stems from many years of radio collecting. Over the years I've owned many of the Philcos shown in Ron's book. Thanks to Michael Prosise, I have the hand-painted model 514 with matching speaker. This set is shown on pg 15. Most of the photos are in color, other than those taken from catalogs of the period. Unfortunately, some of these did not reproduce too well.

Readers should be aware that many sets are shown in "as is" condition. with "tired" cabinets and damaged speaker grilles. However, this allows future restorers a chance to study original colors.

The basic description included in the photo captions is handy. A section in the appendix provides tube line-ups, showing the exact position of each tube on the chassis. This can be a mighty big help when paper charts glued inside the cabinet become lost!

The year-by-year listing of models introduced as found on pages 161-164 allows one to pin-point when various sets were manufactured.

I didn't spend a lot of time on chapter 2 as I've read accounts of Philco history before. Perhaps I'll get a chance to study this section at some future date. However, I would like to correct an error by one of the reviewers writing in *OTB* vol 35, no. 2. Mike Proisise did not state that Philco was the first to shield RF transformers. Mike says "Philco was the first to shield RF transformers coils *successfully*." See *Philco Radio* pg. 11, para 4.

A good reason to purchase this book is for identification of all those Philcos seen at antique shows and radio meets. Ron, you need to put out a pocket-size version!

See *OTB* Vol 35, No. 2 pg 64 for ordering info and price.

by Lauren Peckham

First Aid for the Transistor Radio Collector

I learned of Marty and Sue Bunis several years ago when a new radio collector

group in New Hampshire was just forming. They used to walk around at AWA meets and other radio gatherings handing out info concerning their new club. Marty provided an excellent program at the AWA conference one year, and included many transistor sets from his collection.

As a long time collector of battery and wireless receivers, I gradually became interested in some of the early transistor models. I welcomed the new book, *Collecor's Guide to Transistor Radios* by Marty and Sue Bunis, as a real price guide was definitely needed. A few dealers were desperately trying to elevate prices to hundreds of dollars, even though such sets could be purchased at yard sales or flea markets in the $8 to $10 range!

Whenever I attend antique shows, Marty and Sue's book on identification and value travels along, too. After receiving my copy earlier this year, I scanned the pages, searching for info on the few transistor sets I own. My prize is a Hallicrafters TR-88, which I purchased new in 1958.

Collector's Guide to Transistor Radios is well illustrated, containing excellent photos and a brief description of each model. The book is very helpful for those of us just beginning to appreciate these tubeless wonders. However, there are still times when I need direct consultation, so a call to Marty is not unusual. He is always helpful and certainly very knowledgeable. Occasionally, one finds a set in the original display-type carton. Needless to say, these goodies are worth the small space they require—just move that breadboard down a few inches!

The book may be ordered from Collector Books, PO Box 3009, Paducah, KY 42002 at $17.95, including postage and handling. Of course, the Bunis family will also be glad to fill your order.

by Lauren Peckham

BEHIND THE PANEL

The Design and Development of the 1920's Radio by David Rutland, $18.95, ISBN 1-885391-00-5, 160 pages illustrated , Wren Publishers,
Box 1084, Philomath, OR 97370

I had lost interest in the 5-tube/3 dialers until I read an advance copy of Dave's book on 1920-30 receiver design. I've often wondered how much of a difference there was between the Superflex, the Trirdyn, the One-Sixty, the Technidyne, the Counterphase and all the other trade names of the period. There is a big difference! I read every page and highly recommend this book to all radio set collectors. The author spent two years researching popular publications and pouring over schematics and designs. His findings are yours for $18.95. (Purchase direct or at AWA Conference) by Bruce Kelley

THE RADIO COLLECTOR

Large format, illustrated, annual subscription $20., Box 1306, Evanston, IL 60204-1306

This is a new montly publication designed for the radio set collector. The latest issue covers AC-DC receiver design, a brief history of the Garod Company, an informative tabulation for receiver tube dating, book reviews, a Question & Answer column relating to broadcast receiver problems plus a free buy/sell column. Recommended; copies available at Conference. by Bruce Kelley

THE RADIO BOYS AND THE GARRULOUS GREBE by Stan Dryer
51 pages with drawings, Price: $6.00
Rainy Day Books, Box 775, Fitzwilliam, NH 03447

If you like juvenile radio books, don't pass this one up. In a present day setting, the story centers on the Radio Boys searching for a missing rare Grebe receiver. Yes, there are the bad boys, a pretty girl, the villian, and even an SOS from a " Gibson Girl"! A good addition to your library for only 6 bucks! by Bruce Kelley

AWA REVIEW, VOL. 8

Volume 8 of the AWA Review is now available. See next page for a convenient order form.

In "**Unusual Military Morse Keys**," Louis Meulstee presents a group of British and European wireless and radio keys, with photos of the equipment that used them. This includes some intriguing "agents' sets" and military radios from the West and the Eastern Bloc.

Years ago, tube expert Gerry Tyne gave a talk to an AWA conference audience on some particularly early and scarce tubes. His "**Rare Tubes: How to Recognize Them, and Why They Are Rare**" has been brought from the archives with the aid of photos by collector Jerry Vanicek.

Today's radio historian knows of Reginald Fessenden vaguely, as a prolific wireless inventor. However, we are generally unaware of the variety and volume of his publications. "**A New Bibliography of Reginald A. Fessenden**," assembled by David Kraeuter, shows how extensive those writings were.

The Federal Telephone and Telegraph Company of Buffalo made numerous collectible radios, from the Junior crystal receiver and Model 61 tube set to the "Ortho-sonic" consoles of 1929. But about two-thirds of Federal's lifespan was in the telecommunications industry, struggling with the local Bell company for survival. "**'Federal' as a Telephone Company**" by Ludwell Sibley shows the forgotten side of this firm.

The *other* Federal was the California group that built arc transmitters and provided domestic and transpacific radiogram service. Its direct descendant is in business today. "**The KFS-Federal-Mackay Story: From CW Arc to Silicon Valley**" by Hank Olson, W6GXN, and Bill Orr, W6SAI, traces the origins of today's coastal station KFS from Federal.

One of the greater surviving collections of early vacuum tubes is the one assembled by a figure little known today. In "**Joseph T. Fetsch: Vacuum-Tube Engineer and Collector**," Jerry Vanicek covers the career of this individual and gives photo coverage of his collection.

Many of the prime radios of WW I vintage came from "NESCO." In 1961, AWA printed Ted Duvall's "**A History of the National Electrical Supply Co.**" NESCO can be traced back to 1885 or so, and forward to present-day electronics firms like Potomac Instruments. We've updated this history and expanded it.

In Review 6, Fred Chesson published his handy directory to Signal Corps radios of the 1915-43 BC-SCR-RC era. Now, in "**Navy Electronics Directory**," we have a comparable guide to Navy electronic equipment of the same vintage, that is, up to introduction of the "AN" nomenclature system.

Many AWA members have had experience "debugging" newly built transmitters for efficiency and stability, but we have no idea how hard this work was in the early days. "**A Glimpse at Old-Time Transmitter Development**" is a 1930 report by GE engineer Walter Nelson on his difficulties - and success - in taming a *big* (200-kW) experimental broadcast transmitter.

The book, with 154 pages and 163 illustrations, is priced at $12.50 postpaid (U. S. and Canada; $14 ppd elsewhere). It may be ordered with the form printed in this *OTB*, or by sending a check payable to "Antique Wireless Association" to AWA, 44 E. Main St., Flemington, NJ 08822-1224.

OTHER REVIEWS STILL AVAILABLE

VOL. 6

▪ **The Eaton Tube Collection** (George Clark, Bruce Kelley, Lauren Peckham, et al.); ▪ **The General Electric Company Considers Buying the De Forest Radio Telephone and Telegraph Co., 1916** (John Anderson); ▪ **The First Years of Wireless in the Hawaiian Islands** (Robert and Tina Wiepert); ▪ **A Review of Early Television in the U. K.** (Pat Leggatt); ▪ **Signal Corps SCR-BC-RC Directory** (Frederick Chesson); ▪ **Who Invented the Superheterodyne?** (Robert Champeix, translated by Richard Foster); ▪ **Amateur Radio in the New York City Area Pre-WW I** (Daniel McCoy); ▪ **Radio Tube Manufacture in Australia** (Fin Stewart); ▪ **The Military Communications Explosion, 1914-18** (Louise Moreau); ▪ **The U. S. Patents of Alexanderson, Carson, Colpitts, Davis, Gernsback, Hogan, Loomis, Pupin, Rider, Stone, and Stubblefield** (David Kraeuter)

VOL. 7

▪ **Ricevitore Popolare Italiano** (The Italian People's Receiver) (Robert Lozier); ▪ **Memories of Early Electron-Tube Development** (Edward Herold); ▪ **The First High-Power Transmitter at Poldhu** (Desmond Thackeray); ▪ **Secret Tubes for Radar - the Western Electric 700-Series** (Ludwell Sibley); ▪ **Military Electronic Equipment - Naval Equipment Manufacturers** (Frederick Chesson); ▪ **A Brief History of the Valve Audio Amplifier** (Carlos Fazano); ▪ **The Eaton Tube Collection Revisited** (Jerry Vanicek); ▪ **The Arc Method of Producing Continuous Waves** (William Byron); ▪ **The Goddard Oscillator** (M. D. Hall); ▪ **The Evolution of Broadcasting from the Transmitter Viewpoint** (author unknown, located by John Anderson); ▪ **Index and Additions to Patents Lists** (David Kraeuter)

These earlier volumes are orderable the same as Vol. 8.

OTB BACK ISSUES

The following back issues of the *OTB* are available, at $2.50 each postpaid, with 20% discount for 6 or more issues and 30% off for 12 or more. The nine special-theme issues contain the normal columns and news, plus a core of features on a particular topic area. The number of special-focus pages in each issue is listed below. Index to *OTB* Vols. 20-34 and Review Vols. 1-8, free on request with purchase.

Volume and Number

20-1 NBC Network Chimes/Day-Fan History
20-3 Muchow Collection/J. F. Arnold Receiver
22-2 John Stone Stone Bio/Sylvania Tube History
22-3 Radiola III Factory Mods/Cardwell History/-SCR-270 Radar/SE-1420 (IP-501) Receiver
22-4 Cutting & Washington History
23-1 Magnavox, 1911-31/Amateur Radio Stamps
23-3 AK Horn Speakers/Wehnelt Cathode
23-4 Adams-Morgan History I/De Forest DV-DL Tubes/Vidicon History/Building a Batt. Elim.
25-3 RCA 630 TV/French Cable Co./'30 Receiver
25-4 Four-Tube Superhets/Comet Pro Receiver
26-1 S-M "Around the World Four"/Cockaday BC Receiver/Building a Rotary-Gap Xmtr
26-2 National FB-7 I/L. L. Israel Bio/W'house RC
26-3 National FB-7 II/Radio in S. Africa/Mercury Super 10/Building a 1929 Receiver
26-4 Gilfillan History I/Sargent Model 11 Rcvr
27-1 Gilfillan History II/Schickerling Tubes
28-1 Dynergy AC-Powered Radio/Pilot TC-37 TV
28-2 '28 Radiomovies Today/National AGS I
28-3 Dowd Tube Collection/National AGS II
28-4 SE-1950 Radio Compass/National Sliding-Coil Receivers/Collecting Radio Batteries
29-1 Philco 17 Restoration/ZL2JJ 1934 Station/-Restoring Slide-Coil Nationals/Radio Row
29-2 Fada 460 Restoration/3ZO 1922 Super Station/Forgotten Metal Tubes/Ekko Stamps
29-3 Moorhead Tubes I/British '30s TV I
29-4 Moorhead Tubes II/British '30s TV II
30-1 GE Octagon TV Set/TR-1 Transistor Clones
30-3 **Military Equipment Special** - 17 pp. of 48.
30-4 **Broadcast Receiver Special** - 12 pp. of 48.
31-1 **1903-20 Wireless Special** - 5 pp. of 48.
31-2 **Restoration Special I** - 20 pp. of 56.
31-3 **Tube Special** - 19 pp. of 48.
31-4 **International Special I** - 11 pp. of 48.
32-1 **Communication Gear Special** - 18 pp. of 48.
32-2 An HRO Story/Loewe Tubes/GE M-81
32-3 Photographing Tubes/Hallicrafters Portables/Selectosphere/201A Brands/HRO-500
32-4 Marconi V24 Valve/HRO in British Army
33-2 **40th Anniversary Special** ("Best of *OTB*, 1960-82") - all 48 pp., incl. RCA Metal Tubes
33-4 Scott Special Rcvr/Collecting Transistor Sets
34-1 British Crystal Sets/National Power Units
34-3 **International Special II** - 20 pp. of 64.
34-4 Bell Labs Transistor Set/"Larkspur" Radios
35-1 Radiola & Aeriola Grand/German WW II Magnetrons & Avionics/Tech-Manual Art
35-2 Van Horne Tube Co./Philco TV Designers/Foreign "HROs"/1200-& 1600-Series Tubes

---------- CUT HERE ----------

ORDER FORM - AWA REVIEW AND OTB

Please send the following volumes of the AWA Review:

___ Copies of Vol. 8 _____

___ Copies of Vol. 7 _____

___ Copies of Vol. 6 _____

Price postpaid in U. S. and Canada: $12.50 for one volume; $22.50 for two; $32.50 for three ($14, $24, or $34 elsewhere).

___ *OTB* back issues at $2.50 each (please specify issues; see above for discounts) _____

_____

_____

Optional: Extend my AWA membership by 2 years ($22 US & Canada, $30 foreign). _____

Total _____

Name _____

Address _____

_____

_____

Please make checks payable to AWA. Mail to **AWA,2 Walnut Pl.,Apalachin, NY 13732**.

RECENT RADIO AND ENTERTAINER OBITUARIES

Charles Griffen, W1GYR
1225 New Britain Ave., West Hartford, CT 06110

G. H. "Barry" **BARENTS**, 78, radio and television broadcaster. He broadcast the evening news on WVIT (TV) Hartford, CT for 15 years. He began broadcasting the 7 and 11 p.m. newscasts for the station, then called WKNB (TV), in 1954 his broadcast career spanned three decades on radio and TV stations in Worcester and Pittsfield, MA; Providence, RI; Richmond, VA; and Washington, DC.
(HC 3-29-94)

Royce Perez **BLACKBURN**, 69, musical performer. He was one of the Blackburn Twins who appeared in musicals on television and in films. On Broadway he and his brother Ramon appeared in Jerome Kern's "Music in the Air." During WWII they starred in the stage and screen versions of "Winged Victory." Other credits include "Words and Music" and Working Her Way Through College."
(NYT 4-21-94)

MacDonald **CAREY**, 81 film, stage and television actor. He played the role of Dr. Tom Horton on "Days of Our Lives" and was the voice of the soap opera's opening, "Like sands through the hourglass..." He was associated with the program since its 1965 debut. He appeared on Broadway in more than 50 films. Film credits include "Suddenly It's Spring" (1974), "Dream Girl" (1948), "The Great Gatsby" (1949), etc.
(B 3-28-94 + HC 3-294 + V March 28-April 3, 1994)

Robert Stanley **COE**, pioneer in early CT radio broadcasting. He was a radio engineer for WTIC (AM) in Hartford, CT in the 1930's and 1940's. After military duty in WWII he was a radio engineer for WDRC (AM) until his retirement in 1971. According to his family he was instrumental in the development of the radio proximity fuse. During a portion of WWII he was employed at Johns Hopkins Laboratories in Washington, DC. Mr. Coe operated a professional recording studio after his retirement.
(Manchester Journal Inquirer 3-24-94)

Sir Robert **COCKBURN**, 78, British WWII communications and radar expert. He headed a group of engineers and scientists who developed an anti-radar technology called Window. Window was the code name for barrages of metalized paper strips which were dropped from aircraft to confuse enemy electronic detection devices. He was knighted in 1960 for his scientific achievements.
(NYT 4-4-94)

Betty **FURNESS**, 78, actress, TV reporter and consumer advocate. She was one of the pioneers of television consumer journalism. On WNBC(TV) New York she broadcast the names of errant business and shoddy products. Miss Furness appeared on the "Today" show for sixteen years (1976 to 1992); represented Westinghouse products on "Studio One" (1949 to 1960); CBS-TV's "Ask Betty Furness" show and as moderator of WNTA(TV)'s "At Your Beck and Call" in the 1960's. She began her television career on the Dumont Television Network (Channel 5 in New York City) doing a fifteen minute program called "Fashions, Coming and Becoming."
(B 4-11-94 + HC 4-3-94 + NYT 4-4-94)

Frances **GIFFORD**, 72, film actress. Her film credits include "Jungle Girl" (1941), "Louisiana Purchase" (1942), cry Havoc" (1943), etc.
(NYT 1-27-94)

Bob **GILL**, 70, pioneer black broadcaster. He was a VP with the Bonneville International Corporation. Earlier he was employed on WIRE (AM) Indianapolis, IN, where he was the first black disc jockey on a network- owned station. (HC 3-21-94)

Peter **HACKES**, 69, radio and television broadcaster. He became the voice of the American Association of Retired Persons in 1987 after retiring from a 40-year career as a radio and television correspondent. His program, "Mature Focus," was heard on radio for the past seven years. Following employment with CBS he spent 30 years with NBC in Washington. (NYT 4-22-94)

Pat **HARPER**, 59, news anchor and Emmy-winning reporter. She was one of the first women to become a television news anchor when she joined WPIX(TV) New York in 1974. She won two local Emmy awards at the station. In 1984 she joined WNBC(TV) as co-anchor of the 6 p.m. news with Chuck Scarborough. She retired from NBC in 1990. (NYT 4-4-94)

George **HARVEY**, 90, former President/GM, WFLA(TV) Tampa, FL. He began his radio career at WGN(AM) Chicago in 1935 and in 1948 was involved in program development at co-owned WGN(TV). In 1951 he became the manager of the Tampa Tribune Company's WFLA(AM) and its entry into television with WFLA(TV) in 1955. He retired in 1971. (B 4-11-94)

Walter **LANTZ**, 93, animator and creator of Woody Woodpecker cartoons. In 1930, he made animation history by producing the first Technicolor cartoon -- the five-minute opening sequence of "The King of Jazz." Other cartoon characters included Andy Panda, Chilly Willy, Smedley, Sugarfoot, Charley Beary and Oswald Rabbit.
(HC 3-23-94 + V March 28-April 3, 1994)

James L. "Jimmy" **LYONS**, 78, founder of the Monterey Jazz Festival and its manager from 1958 until his retirement in 1992. In 1958 he organized the first Monterey Jazz Festival with Dizzy Gillespie, the Modern Jazz Quartet, Billie Holiday, Dave Brubeck, Harry James, etc. (HC 4-12-94)

Christopher **LYNCH**, 73, Irish tenor. He sang on the "Voice of Firestone" shows on radio and television. He was chosen by Harvey Firestone to succeed Richard Crooks as the lead tenor on the program in 1946. He remained with the show until 1954. (NYT 4-22-94)

John H. **MARSHALL**, Jr., 56, broadcaster. He was the former owner of KICA(AM-TV) stations in Clovis, NM from 1960 to 1966. Later he worked on radio and television for KGGM in Albuquerque, NM.
(Albuquerque Journal 3-27-94)

George **PEPPARD**, 65, film and television actor. Mr. Perrard appeared in more than 25 films. He starred opposite Audrey Hepburn in the film "Breakfast at Tiffany's" (1961), "The Carpetbaggers" (1964), "How the West Was Won" (1962), etc. On TV he played the part of the Polish American detective "Banacek " (1972 to 1974); a neurosurgeon on "Doctors' Hospital" (1975 to 1976); and as a Vietnam veteran Colonel on "The A-Team" (1983 to 1987). (HC 5-10-94)

Esther **RALSTON**, 91, actress of the silent-film era and vaudeville star. She was known as "The American Venus" for her starring role in the 1926 film of the same name. She appeared in more than 150 films before and after the silent era. Film credits include "Beggars on Horseback" (1925), "Old Ironsides" (1926), "Children of Divorce" (1927), "Tin Pan Alley" (1940), etc. (NYT 1-27-94)

Roy **SMECK**, 94, veteran guitarist, banjoist and ukulele player. During his 75 year career he collaborated with such famous musicians as Irving Berlin and W.C. Handy in live performances and on more than 500 recordings. (NYT 4-8-94)

Jack **SPECTOR**, 66, veteran New York disc jockey. He was heard on WMAC(AM) from 1961 to 1972 followed by various stations, including WCBS(FM) New York, where he

hosted "Saturday Night Sock Hop." At the time of death he was associated with WHLI(AM) Hempstead, New York.
(B 3-21-94)

Lawrence **SPIVAK,** 93, founder, producer and panelist of "Meet the Press." The radio program began in 1945 and made its television debut in 1974. He sold the program to NBC in 1955 but continued as a panelist and producer of the show until his retirement in 1975.
(B 5-14-94)

Saint **SUBBER**, 76, theater producer and Neil Simon partner. He was co-producer of the Cole Porter musical "Kiss Me Kate." Among the Neil Simon plays he produced were "Barefoot in the Park," "The Odd Couple," "Plaza Suite" and "The Prisoner of Second Avenue." He was active on Broadway until the 1980's.
(NYT 4-21-94)

Gary John **WALLER**, 59, former VP/GM, KCOP(TV) Los Angeles. He was associated with the station for thirteen years before joining KVVU(TV) Henderson, NV, as GM in 1975. Later he was employed by KMPH(TV) Fresno and KMGX(FM) San Fernando, both in CA.
(B 4-18-94)

Source Key:
B=Broadcasting, HC=Hartford Courant, NYT=New York Times, V=Variety
Perry Esten W6PN from Rochester, NY, Chief Engineer of Radio Free Europe Passed away in California

LOUISE R. MOREAU, 77, of Glenolden, PA, became a silent key on April 15th.

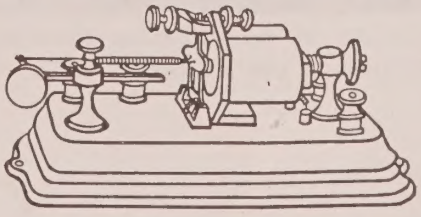
She was born in Pittsburgh Louise R. Ramsey. Her love of history showed in programs that she gave to us on Telegraphy, Johnstown flood, and Civil War. Most of us only knew Lou by her outstanding collection of telegraph keys and their history. She was recognized as the expert that we all counted on to identify the many keys we showed her over the years. Our AWA conference just won't be the same without the laughing from Lou and some of her wit all in a cloud of smoke.

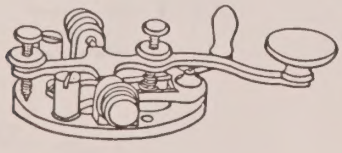
I suppose the best way to know what Lou meant to AWA is to see some of the comments from some who knew her well. Bruce Kelley writes the following: I first met Lou, W3WRE, ex-WB6BBO at an ARRL Convention about 30 years ago. I was pleasantly surprised to learn she was an avid key collector and historian. her extensive knowledge of telegraph and radio keys prompted me to ask her to serve as editor of a column on the subject. This remarkable women contributed regularly to our publication OTB until ill health forced her resignation. Her enthusiasm and good humor will be greatly missed.

As for me (Bruce Roloson) Lou was the first person I met at my very first AWA meet some 26 years ago. She was helpful to me by explaining the organization and what a great group of collectors and historians it had. I always made a point of looking up Lou to just say HI! old friend.

She was the Y L News editor for Q.S.T. from 1966 until 1979. Lou was also a charter member of Johnstown Amateur Radio Club, Telegraph Hall of Fame , a Fellow of the Radio Club of America, and an Honorary Member of the Antique Wireless Association, Inc.

AWA would like to thank Lou's sister Betty Moore and Betty's husband Charles for packing up and seeing to it that AWA was given Lou's entire collection. We will have a sample of her collection at the AWA conference this September.





The photograph below is one that probably best exemplifies the way most of us will remember Lou. The great smile, the patches of all the award and clubs she was part of, and of course, her keys. She spoke of them as friends.

THE EVOLUTION OF THE VOLUME CONTROL

D. K. Owens
478 Sycamore Drive, Circleville, OH 43113

"Volume control" may seem like a dull subject, but early radio designers found it difficult and challenging. Owing to the characteristics of early tubes and circuits, it took a lot of ingenuity to provide volume control on early radios. This article will describe the principal methods of volume control and give a few examples of sets using each circuit.

Designers had to contend with two kinds of distortion caused by tube characteristics in early radios. The first had two forms: cross-modulation resulting from overload of the first RF stage so that an interfering signal "rode through" on the carrier of a strong station, and modulation distortion occurring in later RF stages where a strong signal drove the tubes near cutoff so that they acted like detectors and distorted the modulated carrier. The second kind of distortion resulted from overloading the grid-leak detector used universally until around 1929 and caused severe audio distortion.

The first radio tubes were designed to be heated from storage or dry-cell batteries. To provide some leeway as the battery voltage dropped with discharge, the filament rating was made less than the nominal battery voltage. Thus a tube used with a 6-V battery had a rating of 5 V. The excess voltage was dissipated in a rheostat in series with the filaments. Adjustment of the rheostat maintained optimum filament voltage with falling battery voltage. Fig. 1 shows a typical arrangement. While it was not the original purpose of the rheostat to control volume, it did have that effect as an incidental bonus; volume decreased with filament voltage.

A typical radio had two rheostats: one for the RF tubes and one for the detector and audio tubes. This arrangement was effective in preventing the RF section from overloading the detector on strong signals. Strong signals were handled by reducing RF filament voltage while keeping the audio at full gain. This method of volume control was universally used until the advent of AC radios in 1927.

Tubes for AC radios were designed to operate at fixed voltages supplied by a transformer. Filament rheostats were no longer needed, so set designers had to find other ways to control volume. One manufacturer actually used a rheostat in the filament supply of the first two RF stages to control volume in his first AC set (Mohawk 226-227).

Using a scheme which had been employed in some battery sets (King 30), some makers shunted the RF or detector grid coils with rheostats as in Fig. 2 (Fada 50, 70, Mohawk AC-60). Others used a voltage divider across the secondary of one of the audio transformers as in Fig. 3 (Erla and Freshman). If the control was located at the detector or audio stages, the distortion problem in the RF sections remained, and a "Local-Distance" switch to short the antenna or a rheostat shunting the antenna as a "Sensitivity" control was needed to prevent RF overload. The logical place for the volume control was at the input to the first RF amplifier, but circuit considerations made it difficult to do.

Most receivers of the period had a tuned input circuit. Antenna capacitance detuned the circuit, but adjustment of the first dial of a three-dial set easily offset the antenna effect. This made the setting of the first tuning capacitor different from the other two, i. e., they did not "track." A few makers tried putting a rheostat on the antenna input or the first RF grid to shunt the signal to ground for volume control, but this only added to the tuning problems. The lack of tuning-capacitor tracking also hindered the development of single-dial sets. Early single-dial sets needed a trimmer capacitor to compensate for the antenna effect and maintain tracking, but the extra knob defeated the purpose of a single-dial set. A satisfactory single-dial set with accurate tracking was not really practical until Atwater Kent developed the idea of using an untuned input stage, which he called an "antenna coupling tube," to isolate the antenna from the tuned circuits. This development first appeared in the 1925 one-dial AK Model 30 (#7950). The idea was immediately adopted by most receiver manufacturers.

When AC tubes were released in 1927, Atwater Kent had to get something on the market quickly. His first AC set, Model 36, was a hastily reworked

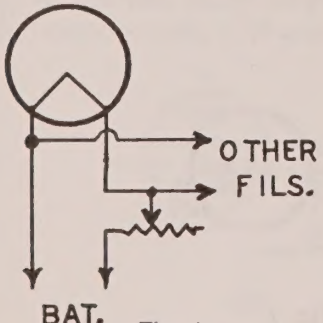


Fig. 1

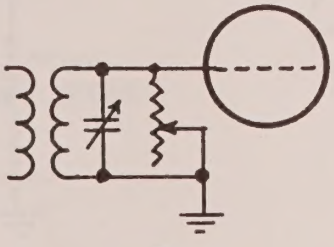


Fig. 2

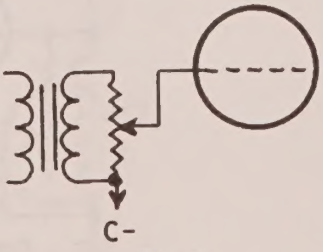


Fig. 3

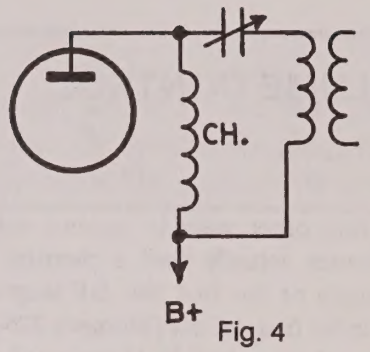


Fig. 4

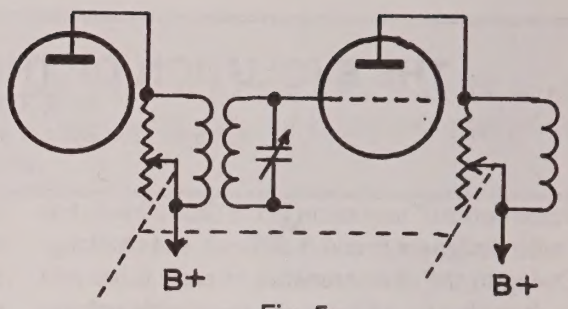


Fig. 5

Model 33 with an outboard power supply made by modifying the Type R battery eliminator. He had no time to work out a new design, and the Model 36 was intended to be a stopgap until he could. The 36 had no filament rheostat, so another method of volume control had to be found. The earliest Model 36 sets had a volume control which appears to be unique and was necessary because the parent Model 33 was a one-dial set with a tuned input circuit and an antenna trimmer. Any kind of volume control on the input would have upset the tracking. The scheme is shown in Fig. 4. The first RF stage was choke-coupled to the next with the RF transformer fed through a variable capacitor consisting of six small, fixed capacitors placed progressively in series by means of a tap switch. Thus the amount of signal coupled to the next stage could be varied. This circuit was evidently unsatisfactory because only a few such sets were made. Later versions of Model 36 had the volume control arrangement of Fig. 5, where the choke was eliminated and the primaries of the first and second RF transformers were shunted with rheostats on a common shaft. Since the primaries were untuned, there was little effect on tracking. There must have been problems, however, because this is the only set to use plate-shunt volume control in the entire Atwater Kent history. Edison (Splitdorf) also used this method in Models C-1 and R-1. I suspect the rapid change from Fig. 4 to Fig. 5 occurred because the first design allowed the subsequent RF stages to pick up enough stray signal to give objectionable volume on strong stations with the control turned completely off. The Model 36 had an unshielded, wooden cabinet.

The Model 37 introduced late in 1927 showed the benefits of having time to do a proper design. The power supply was integrated with the receiver in a newly styled metal cabinet and the "coupling tube" was used. A simple antenna shunt served as a volume control (Fig. 6) and worked so well that it was widely copied by others. Crosley used the identical circuit in his 1927 Model 602. The reason it worked so well was because the grounded metal cabinet provided excellent shielding against stray signal pickup. In the AK sets, the shunt rheostat was designed so that the slider lost contact with the resistance element at maximum volume, removing it from the circuit altogether, and the choke was necessary to maintain a DC grid return. In the 1928 sets, (Model 40 and up), AK replaced the choke with an antenna matching transformer and changed the rheostat to a potentiometer which stayed in the circuit at all times. Again, Crosley used the identical circuit in his 1928 Model 608.

RCA carried this idea to the limit of simplicity (Fig. 7) using a 2000-ohm voltage divider across the input, and nothing else, in the Radiola 17, 18, etc. Because RCA did not use metal cabinets until the Radiola 33 in 1929, this circuit did not work as well for them. My experience is that the unshielded RCA sets pick up enough signal on the wiring of subsequent stages to give objectionable volume on strong local stations with the volume control completely off. My two Radiola 17 sets receive the local station quite loudly even with the antenna disconnected and the "coupling tube" removed. The only way to reduce volume is to detune the receiver. Remember that these sets have no volume control other than at the input so they run "wide open." Any signal picked up on the wiring of the RF amplifiers rolls straight through the set.

The first AC tube for RF and AF use was the Type 26 - an 01A with a redesigned filament. RCA probably produced such a tube because set designers were familiar with its characteristics and no change in signal circuitry was necessary to use it.

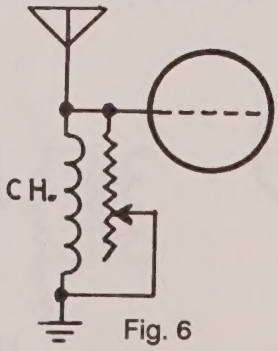


Fig. 6

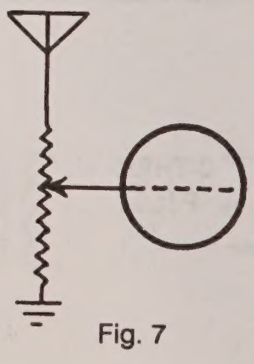


Fig. 7

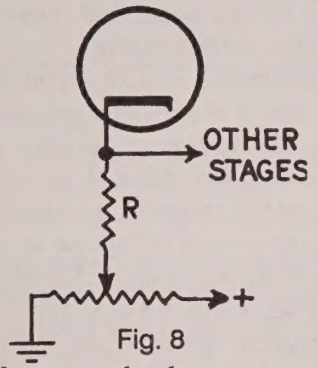


Fig. 8

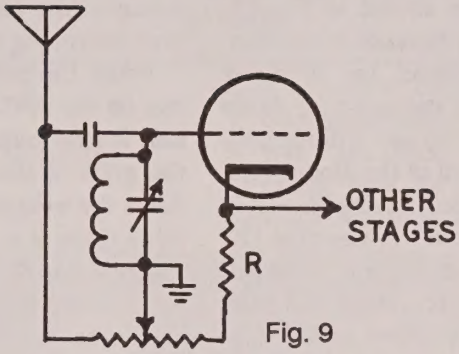


Fig. 9

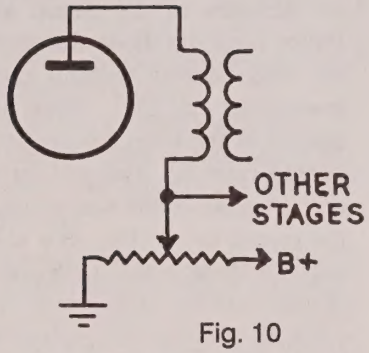


Fig. 10

The detector tube, however, was a totally new design - the indirectly heated Type 27. After the initial excitement, designers realized that the Type 26 was unnecessary. The 27 worked just as well for RF and AF circuits. Tube inventory could be simplified and one power-transformer winding eliminated by using it. Also, another and much better form of volume control was possible because the 27 had a cathode. The circuit of Fig. 8 was developed to control volume by varying the cathode (bias) voltage simultaneously on as many tubes as required. The purpose of R is to fix the lower limit of bias voltage when the control is at minimum. This method was used in many sets such as the Majestic 90 and Bosch 58 and 62. For those who still wanted input attenuation, the circuit of Fig. 9 was used by Crosley, Mohawk, General Motors and others in 1929-30 to shunt the antenna and vary the bias with a single potentiometer. Erla and Majestic were still using this circuit as late as 1933.

Variation of the plate voltage on the RF stages was used by Kennedy and Zenith in the early AC sets to control volume. A simple potentiometer across the B+ supply was employed as in Fig. 10. A disadvantage of this method was the presence of high voltage on the control and the necessity for good insulation.

When the Type 24 screen-grid tetrode came out in 1929, another method of volume control became available. The gain of a tetrode is a function of its screen voltage. The circuit of Fig. 11 was used with the arm of the potentiometer going to the screens of the controlled stages. This method was used by Atwater Kent in the 1929 Models 55 and 60 and by many others. As with bias control, some makers (Fada 35B) wanted input attenuation also. They used an antenna shunt ganged with the screen control. At this time many designers changed to the "plate" detector using a 24 under heavy bias. This detector is much harder to overload than the grid-leak detector.

The simple audio voltage divider of Fig. 12, used almost universally for the last 60 years with R-C coupled amplifiers, was not employed in the early days because of the fixation upon transformer coupling and the distortion problem. There was sound basis for this practice. The voltage gain of typical triodes of the day such as Types 01A, 199, 26 and 27 was only 6 to 9. Additional voltage stepup had to come from transformers. R-C coupled circuits would have needed another stage of audio to get the required total voltage gain. A few designers used the circuit of Fig. 12 for volume control (Crosley Model 77, Fada Models 42, 44, 46) because they incorporated a phonograph into the set and Fig. 12 was the best circuit for using a common volume control for both radio and phono. This circuit, so familiar today, was not widely used until the diode-triode detector was released around 1932. Atwater Kent used the circuit of Fig. 12 at the input to the first IF amplifier (!) in the early version of Model 84, but changed to bias control in the later version.

Some oddball volume control methods have also been used. Most of these schemes have relied on varying the coupling in RF or IF transformers (Silvertone Model 1954) by mechanical means. Needless to say, they were not widely used because electrical methods were cheaper and better.

AUTOMATIC VOLUME CONTROL

The distortion problem led radio designers to seek some method of having the signal itself control the gain of the receiver to prevent overload. Philco pioneered such a circuit in the screen-grid TRF Model 95 of 1930, calling it automatic volume control (AVC). This was a surprisingly modern circuit containing all the elements of AVC and manual volume control which would comprise the standard design in almost all vacuum-tube receivers. The ba-

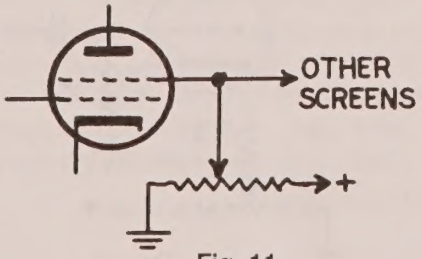


Fig. 11

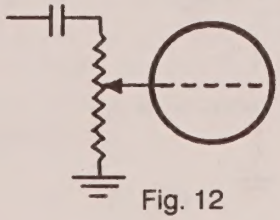


Fig. 12

sic elements of the circuit are shown in Fig. 13. Philco used the diode detector because it can handle large signals without overload and produces several volts of DC. Since no vacuum-tube diode existed at the time, Philco had to use a diode-connected Type 27. The grid served as the diode plate, and the actual plate was grounded, having no part in the circuit other than as a shield. A negative DC voltage proportional to signal strength is produced by the detector at point X. This voltage, fed back (with filtering) to the grids of the previous RF stages, controls their bias and gain. Capacitor C blocks DC while passing the audio component to the volume control potentiometer configured as in Fig. 12. The audio amplifiers were R-C coupled. Remote-cutoff tetrodes Types 35 and 51, released in 1931, were able to handle large signals without distortion because of their gradual cutoff characteristic. Philco used them in the same circuit on the 1931 Models 70 and 90 superheterodynes with excellent results.

One of the most elaborate schemes for automatic and manual volume control ever dreamed up is shown in Fig. 14. The circuit shown was used in the General Motors Model 220 (1931). This type of circuit seems to have been used first in the Silver-Marshall Model 34A of 1930. Variations of it were also used in the Majestic 60 and AK 82 (both 1931). Basically this is just an exceedingly complicated way to control bias on the IF and RF amplifiers and needs some explanation.

The "AVC" tube plate resistor and the cathodes of the controlled stages are returned to the same B+ point (~70 V). The plate of the AVC tube is connected to the grid returns of the controlled stages. The voltage appearing on the plate of the AVC tube (and the grids of the controlled stages) is determined by the voltage drop across R2 due to the plate current in the AVC tube. This current is a function of the voltage on the cathode (the bias) which is manually controlled by a potentiometer. R3 fixes the minimum bias on the AVC tube and the voltage drop across R1 ensures that the voltage on the cathodes of the controlled stages will always be higher than the voltage on the grids. Thus there is always a difference between the grid and cathode voltages (the bias) on the controlled stages, whatever the setting of the potentiometer.

When the potentiometer is at its grounded end, bias on the AVC tube is at minimum and plate current is maximum. The voltage at the plate and on the grids of the controlled stages is at minimum. Since the voltage on the cathodes is relatively constant, there is a large enough difference to bias the stages to cutoff, and volume is zero. When the potentiometer is at the opposite end, AVC bias is maximum, plate current is minimum, grid voltage approaches cathode voltage in the controlled stages, and volume is maximum.

The grid of the AVC tube is connected in parallel with the detector grid in the familiar grid leak configuration. R4 is typically 2-4 megohms. Rectification of the signal on the AVC tube grid provides a control voltage proportional to signal strength, so that the voltage on the plate of the AVC tube (and the grids of the controlled stages) should follow signal strength.

My experience with the General Motors Model 220 is that the volume control function works well, but the AVC action is feeble. Both GM and Majestic tacitly admitted this by providing signal attenuation with "Local-Distance" switches and "Sensitivity" controls. When servicing these sets, it is startling to find high positive voltage on the grids and cathodes of RF and IF amplifier tubes, but the tubes see only the voltage difference and are happy.

When the duodiode-triode Type 55 was introduced in 1932, volume control and AVC design soon became routine. The circuits developed at that time remained in use for the rest of the vacuum tube era.

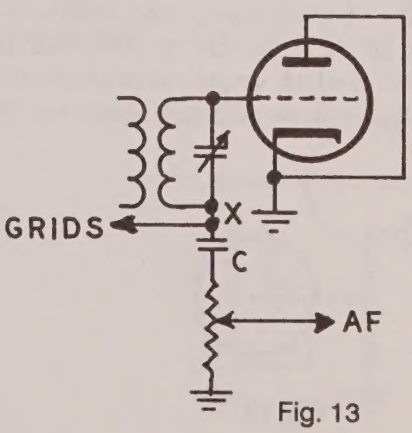


Fig. 13

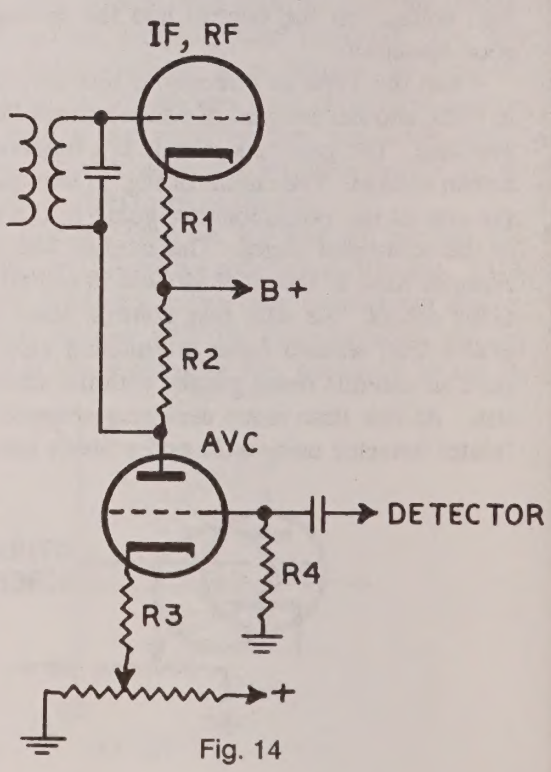
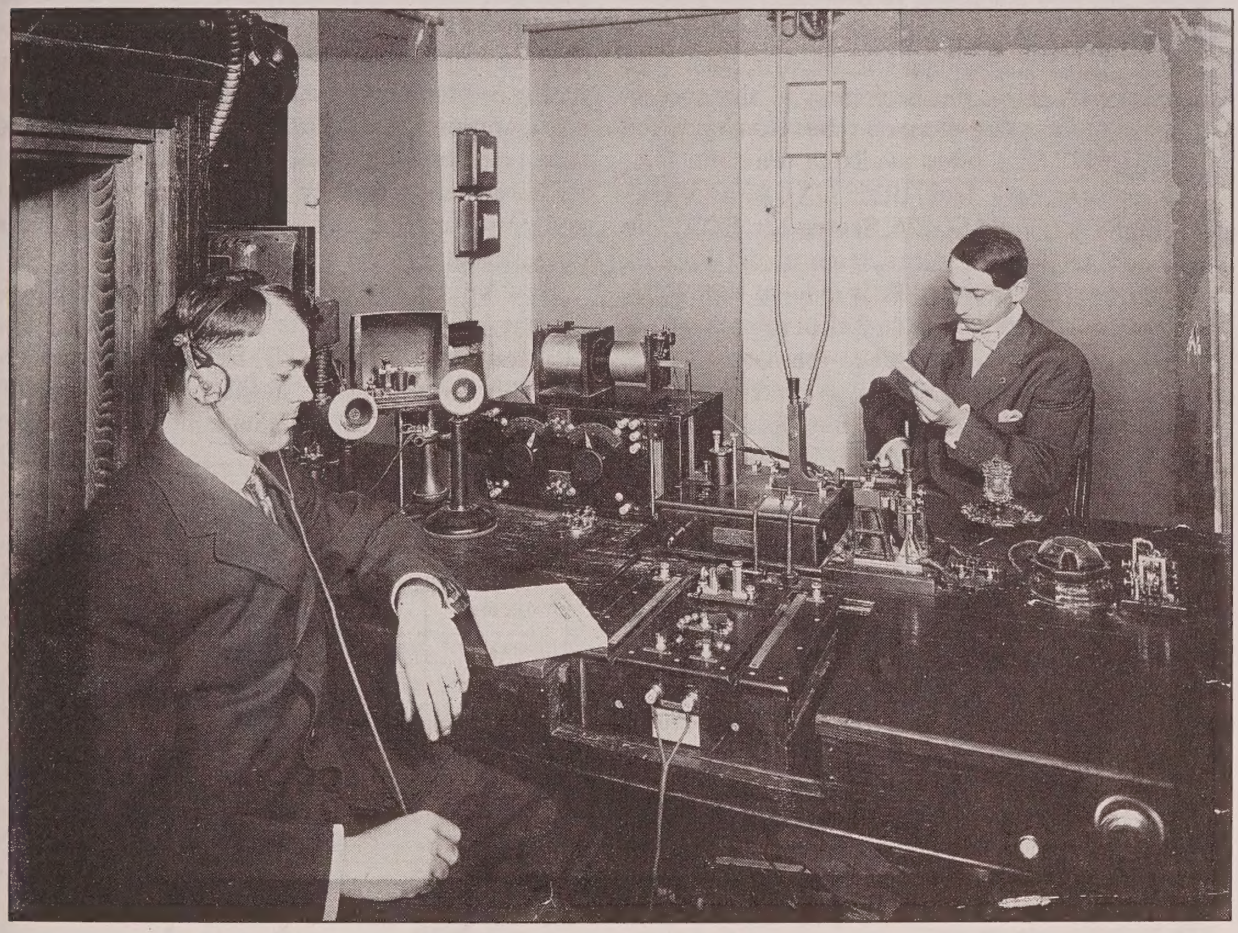


Fig. 14

A TEST FOR RADIO HISTORIANS

Bruce Kelley

1. Name the two men.
2. Identify the station.
3. Cite the building now on site of the station.
4. Name two of the receivers.
5. Name six objects other than receivers.
6. Who owned (operated) the station?
7. Give approximate year the picture was taken.
8. Name the object (pad) in front of operator ("extra credit" item, for those with super-good vision or computer image processing).



ANSWERS TO PHOTO QUIZ

1. Elmo Pickerill and Hugo Gernsback. The former became a naval aviator in WW I, chief operator on the S. S. Leviathan during the '20s, and RCA executive. The latter was, of course, editor-publisher of *Modern Electrics*, *Radio-Craft*, and related magazines; and a founder of the art of science fiction.
2. Roof of Waldorf-Astoria Hotel, New York City, callsign WA.
3. Empire State Building.
4. United Wireless Telegraph Co. Type "D" tuner (in foreground) and International Telegraph Construction Co. receivers (right rear). The loose coupler at left center is unidentified.
5. Send-receive switch; telephones (Western Electric 20AL manual desk stands with outside-terminal receivers); landline telegraph sounder in curved resonator box (on tie line to Western Union?); hand telegraph keys (2); Vibroplex key, plugged into one hand key; vertical feedline, probably terminating in a UWT "anchor gap"; power switch; headphones.
6. United Wireless Telegraph Co. (de Forest).
7. Sept. 1909. UWT figures prominently in Thorn Mayes' Wireless Communication in the United States, which reproduces another copy of this photo from *Modern Electrics* and cites this date.
8. UWT Co. Aerogram forms.

The chamber with the (apparently) multi-stepped door to the left of Pickerill may have been a sound-proof enclosure for the spark gap.

As of 1910, United Wireless had the largest number of land stations (88) ever held by one U. S. company. The corporate offices, and a second station "NY," were downtown at 42 Broadway. The International Telegraph Construction Company, organized by early wireless engineer Harry Shoemaker in Jersey City in 1904, was a subsidiary. UWT used a "looped" antenna system with an "anchor gap" T-R switch to skirt, narrowly, patents held by Marconi. It employed straight-gap transmitters to avoid litigation over patents for rotary-gap sets.

RADIOLA 17 AND 18: ALIKE BUT NOT ALIKE

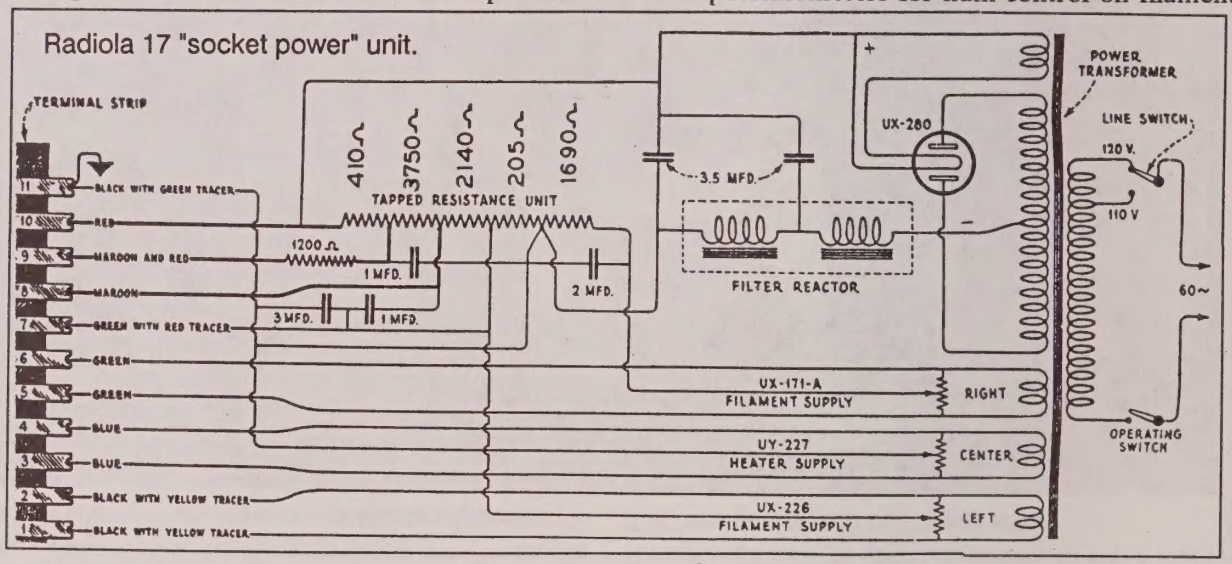
C. Orval Parker
HCR Box 133, Pocono Summit, PA 18346

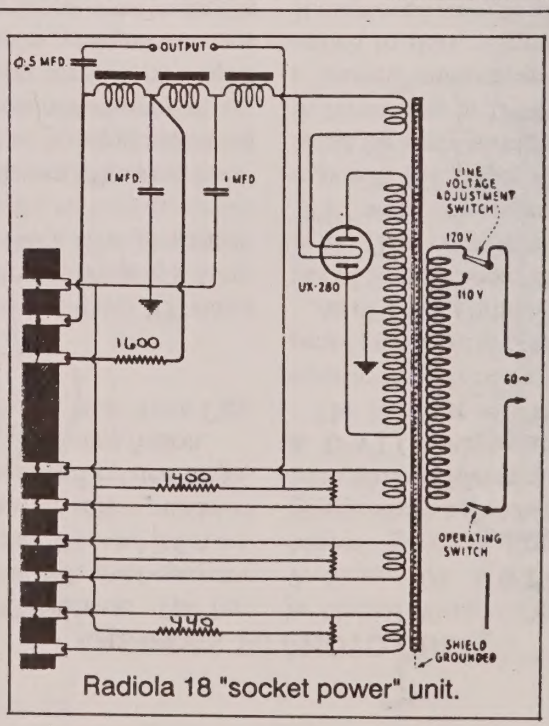
In 1927 it was becoming evident that RCA, as sales agent for General Electric and Westinghouse, was also beginning to designate the type of product that was to be supplied, rather than the makers' product-development departments. In this situation came the beginning of the socket-powered radio, using electron tubes developed for the purpose. The tubes available were the UX-171A, release date May 1926; UX-280 and UY-227, May 1927; and UX-226, September 1927. The stage was set for the introduction of the Radiola socket-powered receiver. It is evident that RCA management, sales and technical development activities were in agreement as to the nature of the product to be marketed. It had to conform to general specifications that would not disrupt RCA's relationship as sales agent per its corporate structure, that is, to have each supplier provide a given percentage of the merchandise sold.

The proposed radio included the cabinet specifications; size, material, decoration, finish, and control location. The bezel and knob design was left to the supplier. The configuration of the radio chassis and socket power unit (SPU) as separate units began here and continued as a fundamental design plan until introduction of the Radiola 48 and Victor R-15 with integrated chasses. The common SPU design features were the size, shape, parts location, power transformer, inductive filter (chokes), tube sockets and locations, and terminal-strip location. The radio chassis likewise was specified as to size, shape, tube sockets and location, tuning condenser and dial, and audio-transformer configuration. The general specification covered tube types and functions: antenna coupling, two RF amplifiers, grid-leak detector, audio amplifier and power output. Volume control was to use a potentiometer in the antenna circuit.

Now we are exposed to the differences in engineering application to the product supplied. The SPU for the Model 17 (GE) began with the inductive filter located in the negative rectifier output; three potentiometers for hum control on filament supplies; filter condensers (capacitors), six-in-block (total filter and bypass capacity 17 μF - coincidental with the model number?); five-section wire-wound ceramic voltage divider; and detector filt er resistor for voltage distribution. There were 11 leads on the terminal strip and cable.

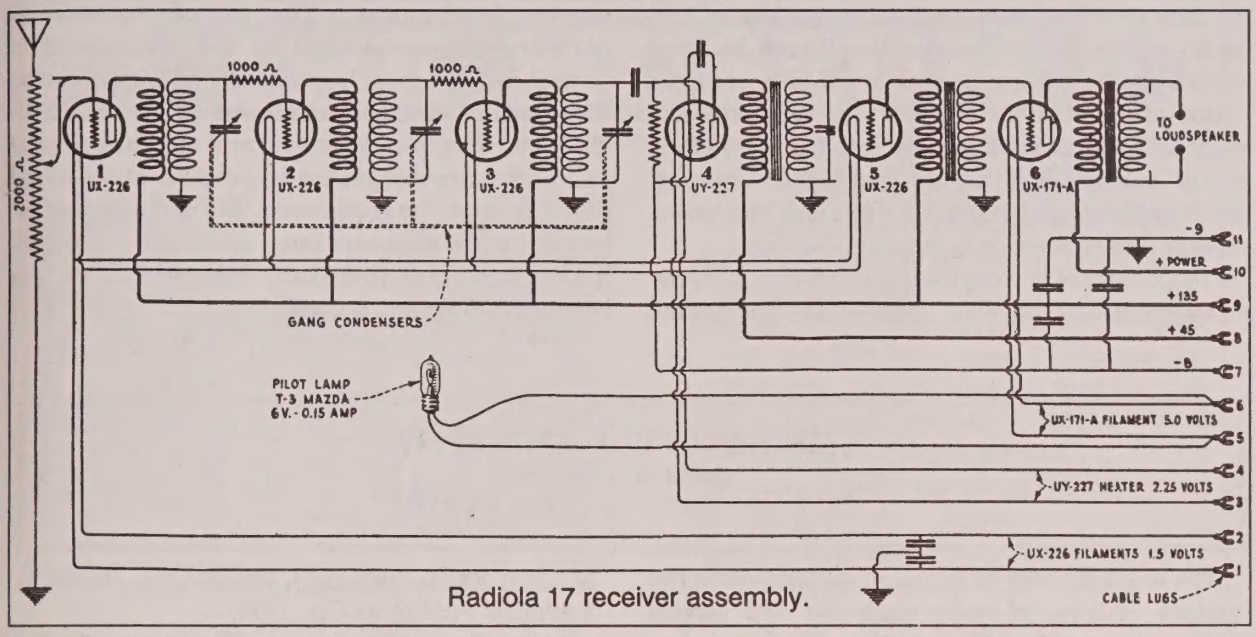
Radiola 17 "socket power" unit.





Radiola 18 "socket power" unit.

By contrast, the Model 18 (Westinghouse) SPU placed the inductive filter in the positive rectifier output, fixed center-tapped resistors for hum control on filament supplies, two filter capacitors and audio output filter in a block (total filter and bypass capacity four μF),



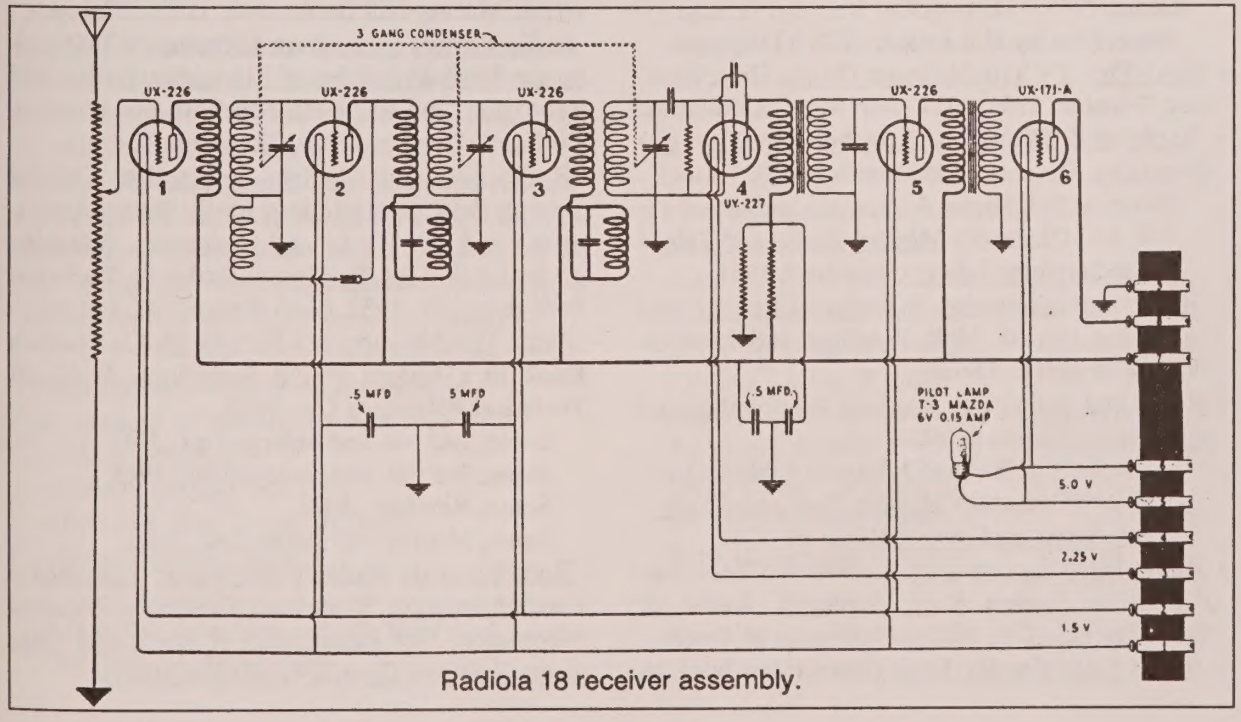
Radiola 17 receiver assembly.

three fixed wirewound resistors for bias and B+ distribution, and nine leads on the terminal strip and cable.

The Radiola 17 (GE) chassis uses grid-damping resistors to prevent oscillation. Five capacitors are incorporated into a tuner-unit block to bypass B+ and 1.5-V filament leads. An output transformer is included for speaker drive.

The alternative design, the Radiola 18 (Westinghouse) avoids oscillation by a dual-purpose coil mounted inside each RF transformer; first, as a distributed capacitor and, with the paralleled capacitor, a tuned circuit (resonant at about 500 kHz) in the plate load to increase low-frequency sensitivity. To add sensitivity and selectivity, the first RF stage incorporates a feedback (regeneration) circuit with adjustable capacitor control. A four-section capacitor block bypasses the 1.5-V filament and B+ lines. Two composition resistors provide voltage division to supply detector plate voltage. Audio output is isolated with a choke-capacitor net in the SPU filter.

To summarize: the differences between circuit configurations begin with the B+ filter and voltage dividers; at that time the most failure-prone components were the tubes, closely followed by larger capacitors. Thus the Westinghouse approach with considerably fewer capacitors, both filter and bypass, seems to be significant as to reliability. The voltage-divider networks had failure problems but the individual components of Model 18 are less costly to replace. In the receiver chasses the difference for oscillation control - grid suppression versus distributed capacitor - is of doubtful significance. The addition of low-frequency gain by tuned plate loads and regeneration is significant, so the



Radiola 18 receiver assembly.

18 does provide better performance. Use of the audio output transformer in the 17 can be construed as a better approach than the filter configuration of the 18, if more costly - in the 18 the unwary user who plugs a speaker into the set while it is "on" can get an electrical shock from charging the 0.5-μF coupling capacitor. The lack of a single style of dial-light shade is questionable logic.

Comparison of the engineering techniques involved indicates that the Westinghouse concept was the simpler development. The use of regeneration (Armstrong patent owned by them) appeared in several Radiola models, especially of Westinghouse development. GE evidently came up with its Radiola faster than Westinghouse, as it may be assumed that both were designated to produce at the same time. It might be considered "hurried-engineered" by GE. If the elements listed above are compared, it is evident that technically the two models are very much different, *not alike*!

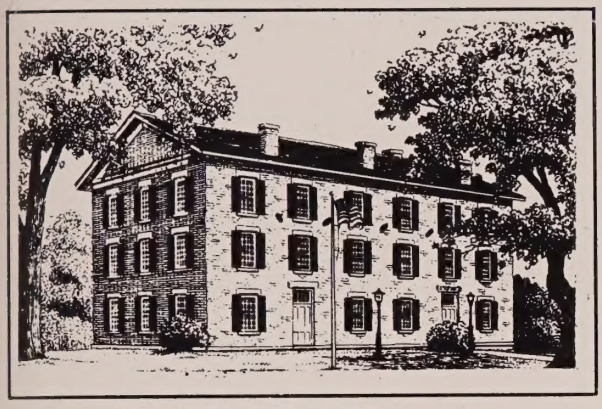
A GHIRARDI BIBLIOGRAPHY

David W. Kraeuter
506 E. Wheeling St., Washington, PA 15301

The following may be useful in distinguishing the various editions of radio textbooks and service guides produced by Alfred A. Ghirardi.

- Auto-Radio Pocket Trouble Shooter "Gadget," Radio & Technical Publishing Co., 1937.
- Home-Radio Pocket Trouble Shooter "Gadget," Radio & Technical Publishing Co., 1937.
- How To Use Test Probes, J. F. Rider, 1954 (with Robert G. Middleton).
- Modern Radio and Television Servicing Library, Rinehart, 1951-1959 (with J. Richard Johnson). Includes Vol. 1, Radio and Television, Receiver Circuitry and Operation, and Vol. 2, Radio and Television, Receiver Troubleshooting and Repair.
- Modern Radio Servicing, Radio & Technical Publishing Co., 1935, 1300 pages.
  Same, Murray Hill Books, Technical Division, 1935, fifth impression, 1318 pages.
  Same, Radio & Technical Publishing Co., 1936, 1302 pages.
  Same, 1943, 1318 pages.
  Same, Murray Hill Books, 1955, 1318 pages.
- Pix-O-Fix: TV Troublefinder Guide, Holt, Rinehart, Winston, 1953, 1954 (with R. G. Middleton).
- Radio and Television, Receiver Circuitry and Operation, Rinehart, 1951. (with Jess E. Dines).
  Same (with J. Richard Johnson), published as Vol. 1 of Ghirardi's Modern Radio and Television Servicing Library, Rinehart, 1951.
- Radio and Television, Receiver Circuitry and Operation, rev. ed., Holt, Rinehart, and Winston, 1964 (with Jess E. Dines).
- Radio and Television, Receiver Troubleshooting and Repair, Rinehart, 1952.
  Same (with J. Richard Johnson) published as Vol. 2 of Ghirardi's Modern Radio and Television Servicing Library, Rinehart, 1959.
- Radio Field Service Data (and Answer Book Supplement to Modern Radio Servicing), Radio & Technical Pub. Co., 1935 (with Bertram M. Freed).
- Radio Field Service Data (companion book to Modern Radio Servicing), 2ns rev. ed., Radio & Technical Publishing Co., 1936.
- Radio Physics Course; an Elementary Radio Text Book for Students, Set Builders and Servicemen, Radio Design Publishing Co., 1930.
  Same, Radio & Technical Pub. Co., 1931.
- Radio Physics Course; an Elementary Text Book on Electricity and Radio, 2nd ed., rev. and enl., Radio & Technical Pub. Co., 1930, 1931, 974 pp.
  Same, 2nd ed., Rinehart, 1932, 972 pages.
  Same, 1958.
  Same, 2nd ed., rev. and enlarged, Radio & Technical Publishing Co., 1932, 972 pages.
  Same, 1933.
  Same, 1937.
  Same, 1942.
  Same, Murray Hill Books, 1933.
- Radio Physics Course : an Elementary Text Which Explains the Principles of Electricity and Radio, 2nd ed., rev. and enlarged, Technical Division, Murray Hill Books, Inc., 1932, 972 pages.
- Radio Physics Course; an Elementary Textbook on the Basic Principles of Electricity, Radio, and Television, 2nd ed., Holt, Rinehart and Winston, Technical Division, 1960, 972 pages.
- Radio Servicing Course; A Practical Concise Text on the Use of Modern Radio Service Instruments and the Rapid and Systematic Attacking of Radio Service Problems, Radio & Technical Publishing Co., 1932. (with Bertram M. Freed).
- Radio Trouble-shooter's Handbook; Companion Book to (Modern Radio Servicing), Radio & Technical Publishing Co., 1939.
  Same, 2nd rev. and enlarged ed., 1941.
  Same, 3rd rev. and enlarged ed., 1943.
  Same, Rinehart, 1943.
  Same, Murray Hill Books, Inc., 1943.
- Receptores de Radio y Television: Circuitos y Funcionamiento, Barcelona: Ediciones Tecnicas Marcombo, 1968 (translation of Radio and Television Receiver Circuitry and Operation).

THE MUSEUM



AWA MUSEUM NEWS
by Bruce Kelley

The AWA Museum started the season with a bang: broadcasts over PBS and a local TV station plus favorable publicity in "Popular Electronics" magazine. The first two weeks found a Cub Scout group, a DX club, and a class of college students viewing the exhibit areas. Jim Fredrick , K2GBR, the new guide co-ordinator, has a full season of guide scheduling and welcomes local member participation.

Work continues at the Annex with several projects scheduled including an inventory of the large commercial/amature receiver collection. The May Spring Meet attracted not only local members but others from nearby states and Canada with over 100 at the luncheon. Two auctions and a flea market attracted buyers looking for bargains. This local Meet has become a tradition and is always held the first Saturday in May.

Additional activities include exhibit booths at the ARRL Atlantic Division Convention (Rochester) and GRAMS hamfest. Our presence at hamfests provides an opportunity to publicize the Museum, enroll new members and sell early radio publications.

MEMORIAL GIFTS (Monetary)
In memory of Louise Moreau, W3WRE
---Gladys Bishop
---Dexter Deeley, N2XYS
---Bill and Jane Denk, W3IGU
---Bruce Kelley, W2ICE

In memory of Irving Smith, WB3BCY
---Glenna Smith Matson

AWA ELECTRONIC COMMUNICATION MUSEUM

Location: Village Green, NY 5 & US 20, Bloomfield, New York
Hours: May 1 through October 31: Sunday, 2-5 PM; also, June 1 - August 31: Saturday, 2-4 PM and Wednesday, 7-9 PM. (Closed Holidays)
Group tours: by appointment
Museum telephone: 716-657-6260
Amateur Station: W2AN
Mailing Address: Bruce Kelley, Curator, 59 Main St., Bloomfield, NY 14469
FREE ADMISSION

NET OPERATION - AM ACTIVITIES

AWA Net operation has slowed down during the summer months but will be picked up in the fall. The 11 year sunspot cycle is giving the 20 meter Tuesday net problems but hasn't affected Mike's (N4FS) 40 meter gathering or Hoagy's (W2SHN) weekly schedules. (See Net Schedule on page 2) W2SHN and N4FS have been doing a fine job in keeping these amateur nets active.

W2ZM, W2ICE, and K3ZJW are planing a special AM event later this fall when W2AN will contact AM, SSB, and CW stations with the James Millen Memorial AM transmitter on 75 meter AM phone. A special qsl card will be sent to all stations worked. Scheduled hours in November OTB.

RECENT DONATIONS TO AWA MUSEUM
(parts, sets, magazines, books, etc.)

Stan Avery, WM3D
Hartley Browen, KD2AF
Barry Kennedy, N2PNG
Charles Lustik, K3HSS
Fred Linn, W9NZF
Ed Gable, K2MP
Dave Geiser, WA2ANU
Nolan Stephany, N2EAW
Fred Hammond, VE3HC
Roger Hart
Bart Lee
Mike Csontos
C.V.C Corp.
Jeanette Dunlap
Tony Prasil

ANTIQUE RADIO CLUB OF AMERICA and ANTIQUE WIRELESS ASSOCIATION to MERGE

by BRUCE D. ROLOSON

Back in the early March of 1994 a meeting was held between officers of AWA (Antique Wireless Association, Inc.) and ARCA (Antique Radio Club of America). This meeting was the beginning of the merger of the two Clubs. Basic agreements were made at the March meeting that were presented to the Boards of Directors of both clubs. The AWA Board of Directors approved the merger in May and ARCA's Board of Directors approved the agreement in June. In order to finalize the merger, the members of ARCA will be asked to vote on the merger in August.

AWA will continue to produce the OTB on a quarterly basis while merging the Antique Radio Gazette into the OTB.

The current chapter system ARCA developed will be adopted and expanded to more areas of the USA and other countries. A director of the chapters will be named soon that will work with existing chapters and develop new ones. An expanded meeting schedule will also be planned along with chapter key people. The existing chapters are in the following states: Arkansas, Hawaii, Kentucky, New York (Hudson Valley/Campbell Hall) and West Virginia.

All existing members of ARCA will automatically become members of AWA once the merger is finalized. Current terms of membership in ARCA will be transferred directly to the same term-length in AWA. ARCA members that are already members of AWA will have their AWA memberships extended for the time remaining on their ARCA memberships.

I believe this merger will provide for a stronger, more flexible and efficient combined organization that will provide more opportunities for its membership and chapters.

On behalf of AWA, I would like to welcome the members of ARCA to AWA to be a part of the largest organization of its kind in the world.

AWA

ARCA

ANTIQUE RADIO CLUB of AMERICA